A **PROJECT** REPORT ON

MESS FINDER

- **Submitted to:**
  - ♦ Bankura Sammilani College, Bankura
- **Affiliated to:**
  - ♦ Bankura University, Bankura

Submitted by

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Guide Details

INTERNAL	EXTERNAL
1. Mr. Sanjoy Sen	

INDEX

PREFACE

In today's fast-paced urban environment, finding suitable accommodation for students and working professionals can be a challenging task. With the rising demand for affordable and accessible rental spaces, digital solutions have become essential in streamlining the search for comfortable living arrangements.

MessFinder is a technology-driven platform designed to simplify the process of locating **mess rooms and rental spaces** for individuals seeking budget-friendly accommodations. By integrating **real-time listings, smart filtering, and secure communication**, MessFinder ensures users can effortlessly discover living spaces that match their needs.

This documentation provides a **comprehensive guide** to the MessFinder system, detailing its **architecture, core functionalities, and implementation strategies** to enhance the rental search experience.

ACKNOWLEDGEMENT

We, the students of **Computer Science, Bankura Sammilani College, Bankura**, proudly declare that our project, **"MESS FINDER,"** has been successfully completed under the expert guidance of **Prof. Sanjoy Sen**, Computer Science Department, Bankura Sammilani College, Bankura. We sincerely express our deepest gratitude for his invaluable support, insightful feedback, and continuous encouragement throughout the development of this project.

We would also like to extend our heartfelt appreciation to **Prof. Tapas Ghosh (Head of Department)** for his unwavering guidance, constructive suggestions, and motivation, which greatly contributed to our learning and project completion.

Furthermore, we are truly grateful to our **families and friends** for their patience, silent cooperation, and emotional support during this challenging yet rewarding journey. Lastly, we acknowledge the contributions of all individuals—known and unknown—who assisted us in various capacities throughout this project.

This project stands as a testament to teamwork, dedication, and the pursuit of technological innovation in solving real-world problems.

PROJECT PROFILE

❖ System information

System definition : MESS FINDER (**MessFinder**)
Type of the Application : Web Application
Time Duration : April 2025 – June 2025

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INTRODUCTION

Finding suitable rental accommodations—especially for students and working professionals can be a daunting challenge in urban areas. Traditional rental searches often involve manual inquiries, unreliable listings, and time-consuming processes, making it difficult to locate affordable and convenient living spaces.

MessFinder is a tech-driven solution that streamlines this process by offering a smart, intuitive, and efficient platform for discovering rental spaces. Through real-time listings, user-friendly filters, and direct owner communication, MessFinder ensures a seamless experience in finding suitable mess rooms and rental accommodations.

Designed with modern web technologies and Firebase, the platform supports secure messaging, profile management, and location-based searching, making it an ideal choice for those seeking comfortable and budget-friendly housing solutions.

This document explores MessFinder's architecture, functionalities, and implementation strategies, providing a detailed insight into its development and purpose.

SCOPE OF SYSTEM

MessFinder's scope extends across multiple sectors, enhancing **housing accessibility** through technology. Key applications include:

1. **Students & Educational Institutions –** Helping students find **hostels, PGs, and shared mess accommodations**.
2. **Working Professionals –** Assisting employees in locating **budget-friendly rental spaces** close to workplaces.
3. **Property Owners –** Offering landlords a **convenient way** to list and manage their accommodations.
4. **Security & Trust –** Enabling verified user interactions for **scam-free transactions**.
5. **Government & Public Housing –** Can potentially integrate with **public housing initiatives**.
6. **Smart City Infrastructure –** Contributing to **digitalized rental solutions** for urban areas.

FEASIBILITY STUDY

1. Introduction

Finding suitable rental accommodations is a common challenge for **students and working professionals** in urban areas. Traditional rental processes often rely on **manual inquiries**, outdated listings, and inefficient communication. A **digital solution** can enhance **accessibility, reliability, and efficiency** in finding affordable housing options.

2. Project Overview

MessFinder is a **real-time rental discovery platform** that connects **tenants with landlords**, focusing on **mess rooms, shared accommodations, and independent rental spaces**. The system aims to **eliminate manual searching** and streamline **secure owner-tenant interactions**, ensuring a seamless experience.

3. Key Components

- **Frontend:** A responsive **web application** that enables users to search, filter, and explore listings.
- **Backend:** A robust **Firebase-based infrastructure** to store and manage user data, rooms, and messaging.
- **Communication: Secure chat system** allowing users to interact directly with property owners.

- **Filtering & Search:** Smart filters based on **price, location, and accommodation type** to refine searches effectively.
- **User Authentication:** Secure **login system** to validate users and ensure genuine listings.

4. Methodology

- **User Registration:** Landlords and tenants sign up to access platform features.
- **Room Listings:** Owners add rental properties, including images, location, and pricing details.
- **Search & Filtering:** Users browse listings, apply filters, and shortlist options.
- **Direct Chat Integration:** Tenants and landlords communicate securely via an in-app messaging system.

5. Challenges and Considerations

- **Listing Verification:** Ensuring reliable and scam-free property listings.
- **User Engagement:** Encouraging landlords to keep listings up to date.
- **Privacy & Security:** Protecting user data and messages from misuse.
- **Scalability:** Supporting multiple users without compromising performance.

6. Applications

- **Students:** Quick access to hostels, mess rooms, and PG accommodations.
- **Working Professionals:** Affordable rental spaces near offices and business hubs.
- **Property Owners:** Easy-to-manage listing system with direct tenant interaction.

7. Technical Feasibility

MessFinder leverages **modern web technologies** for an optimized user experience:

- **Frontend:** React.js for dynamic UI and responsive design.
- **Backend:** Firebase for real-time database management and authentication.
- **Communication:** WebRTC-based secure chat system.
- **Hosting:** Cloud-based deployment for accessibility across devices.

8. Economic Feasibility

- **Development Cost:** Open-source and cloud-based, reducing infrastructure expenses.
- **Maintenance:** Minimal due to Firebase's automatic scaling.

- **User Benefits:** Increased efficiency, accurate listings, and reduced search time.

9. Operational Feasibility

- **User Accessibility:** Designed for **non-tech users** with a simple interface.
- **Integration:** Compatible with existing rental platforms or standalone operation.
- **Scalability:** Handles a growing number of users and property listings.

10. Schedule Feasibility

The project follows a structured timeline:

- **Phase 1:** Platform development & testing.
- **Phase 2:** User onboarding & listing population.
- **Phase 3:** Optimization & feature expansion based on user feedback.

SYSTEM PROFILE

▪ OVERVIEW

MessFinder is a **web-based accommodation discovery platform** designed for **students and working professionals**. It helps users find suitable **mess rooms, PGs, hostels, and rental spaces**, simplifying the search process with **real-time listings, smart filters, and direct communication with property owners**.

▪ SCOPE OF SYSTEM

- Facilitates **searching and listing** rental accommodations.
- Enables **direct messaging** between tenants and landlords.
- Provides **secure authentication** and user management.
- Allows **filtered searches** based on budget, location, and room type.
- Supports **verified listings** to prevent fraudulent postings.

▪ MODULES AFTER LOGIN BY OWNER

- **User Authentication Module –** Secure login/signup via Firebase.
- **Room Listing & Management –** Owners can add, update, and remove listings.

- **Search & Filtering Module –** Users refine searches based on key parameters.
- **Chat Module –** Secure communication between tenants and landlords.
- **User Profile & Preferences –** Tenants can save/bookmark listings.

▪ MODULES AFTER LOGIN BY USER

- **Dashboard –** Personalized recommendations and saved listings.
- **Search & Filters –** Advanced filtering for targeted search results.
- **Chat & Interaction –** Direct messaging with property owners.
- **Profile Management –** Users update their details and preferences.
- **Booking & Inquiry System –** Ability to express interest in a room.

SYSTEM REQUIREMENTS

HARDWARE COMPONENTS:

- **Server:** Cloud-based infrastructure (Firebase) for scalability.
- **User Devices:** Any laptop, mobile, or desktop with browser and Internet support.
- **Storage:** Cloud storage for user data and images (Firebase Storage).

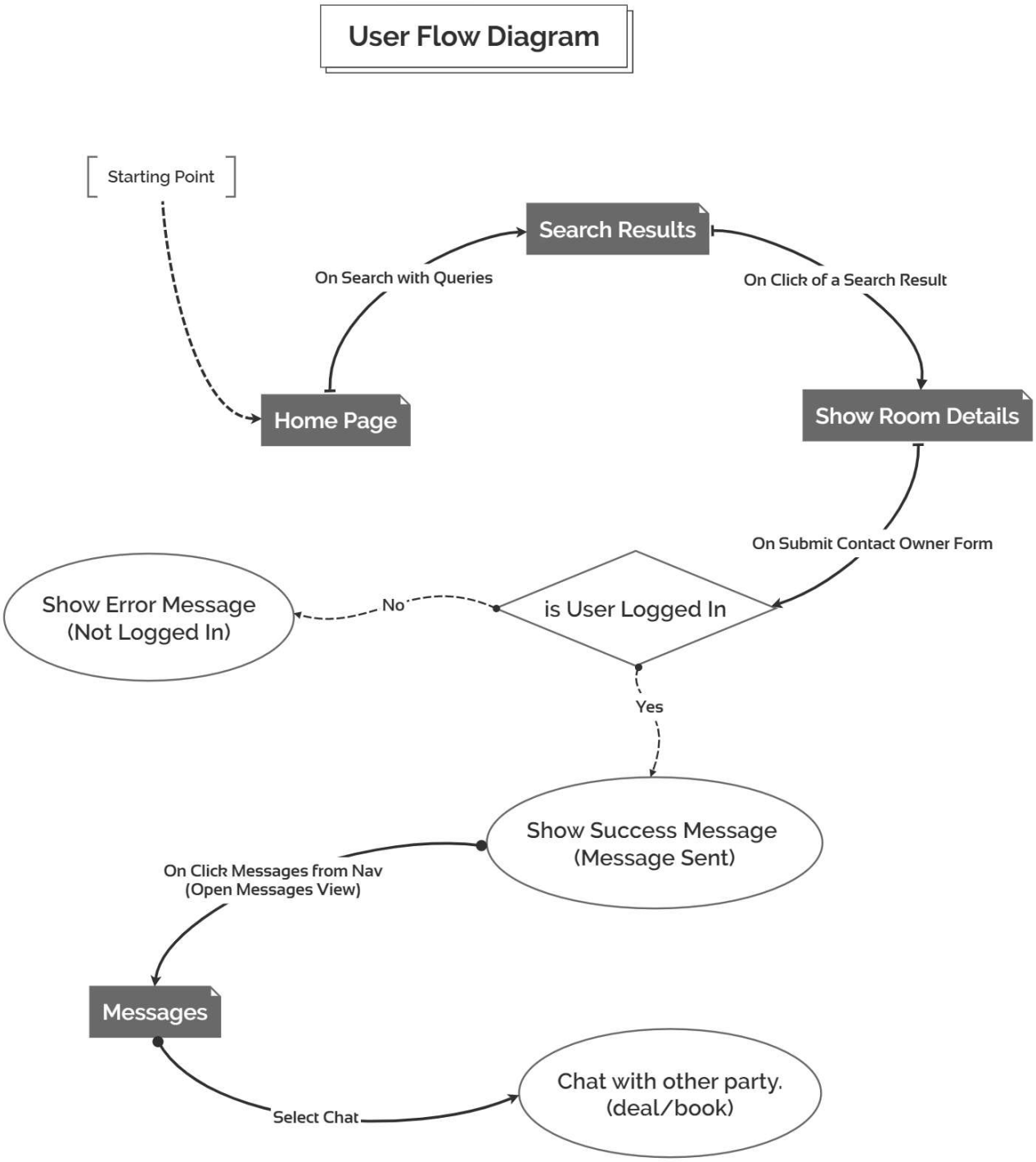
SOFTWARE COMPONENTS:

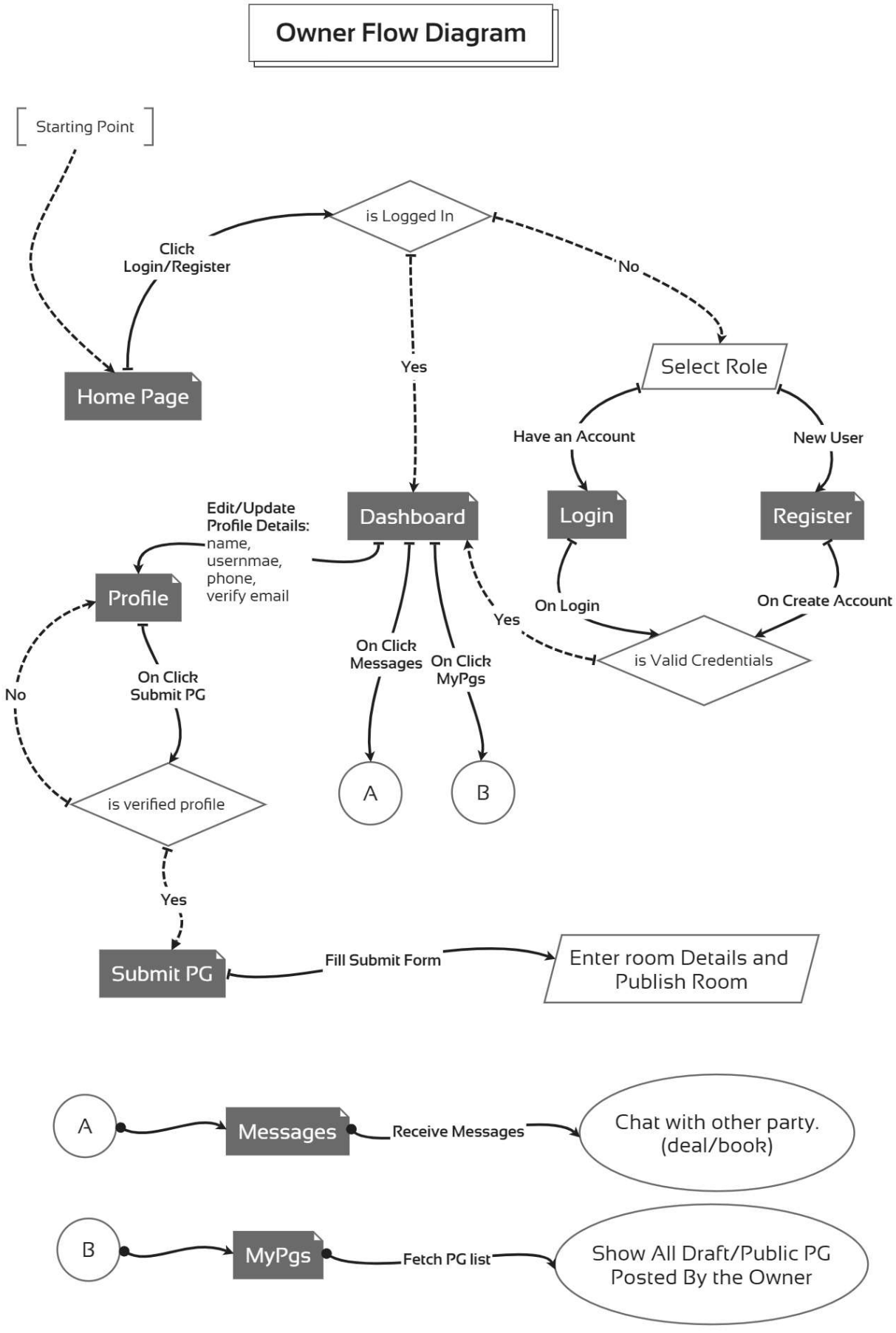
- **Frontend UI:** Designed for seamless user experience using React.js.
- **Backend Services:** Firebase for authentication, database management, storage, and messaging.
- **Search & Filtering System:** Efficient algorithms for customized search results.
- **Messaging Module:** Real-time chat system for tenant-owner interaction.

TOOLS AND TECHNOLOGY

- **Programming Languages:**
  - HTML,
  - CSS,
  - JavaScript (React.js for frontend),
  - Firebase (for Backend Services).
- **Libraries & Frameworks:**
  - React Router DOM,
  - Tailwind CSS,
  - Firebase SDK.
- **Database System:**
  - Firebase Realtime Database for dynamic data handling.
- **Operating Systems:**
  - Platform-independent (works on Windows, macOS, Linux).

SYSTEM FLOW DIAGRAM




Owner Flow Diagram
Starting Point
is Logged In
Click Login/Register
No
Yes
Home Page
Select Role
Have an Account
New User
Login
Register
Dashboard
Edit/Update Profile Details: name, usernmae, phone, verify email
Profile
On Login
On Create Account
Yes
is Valid Credentials
On Click Messages
On Click MyPgs
No
On Click Submit PG
A
B
is verified profile
Yes
Submit PG
Fill Submit Form
Enter room Details and Publish Room
A
Messages
Receive Messages
Chat with other party. (deal/book)
B
MyPgs
Fetch PG list
Show All Draft/Public PG Posted By the Owner

MODULES

MessFinder consists of several essential modules to ensure **smooth operation and user experience**:

1. **User Interface Module** –

   Intuitive dashboard for **searching, filtering, and listing accommodations**.

2. **Database Management Module** –

   Firebase backend for **user authentication, room listings, and chat records**.

3. **Search & Filtering Module** –

   Smart filters based on **budget, sharing type, and location**.

4. **Secure Chat Module** –

   Real-time **messaging** for **tenant-owner interactions**.

5. **Security & Authentication Module** –

   User verification and **secure login system**.

ROLES & RESPONSIBILITIES

1. Property Owners:

1. Register and create a verified owner profile.
2. Add new room listings.
3. Edit or remove listings as needed.
4. View and respond to messages from interested tenants.

2. Users (Tenants)

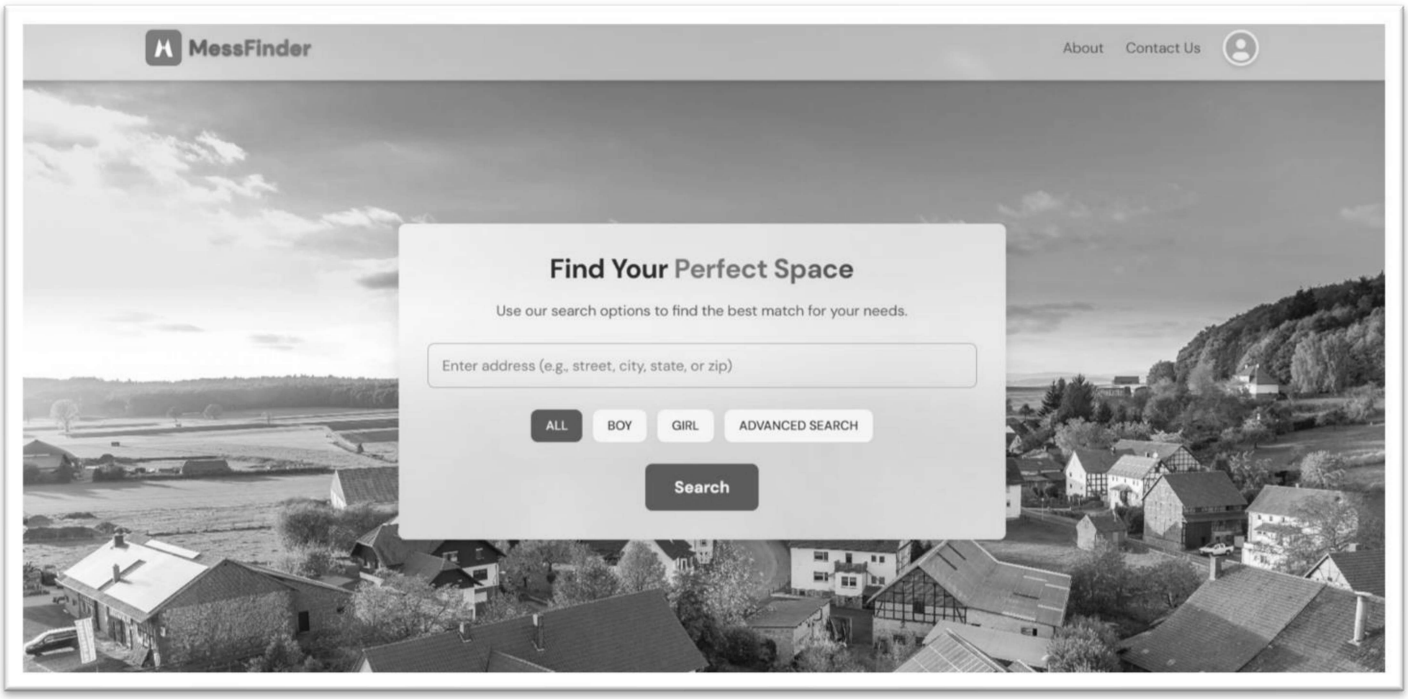
1. Sign up and complete profile for a personalized experience.
2. Search for rooms using filters like price, mess type, and location.
3. Contact property owners through secure chat.
4. Report any suspicious activity or false listings.

3. Unauthorized Users (Guests)

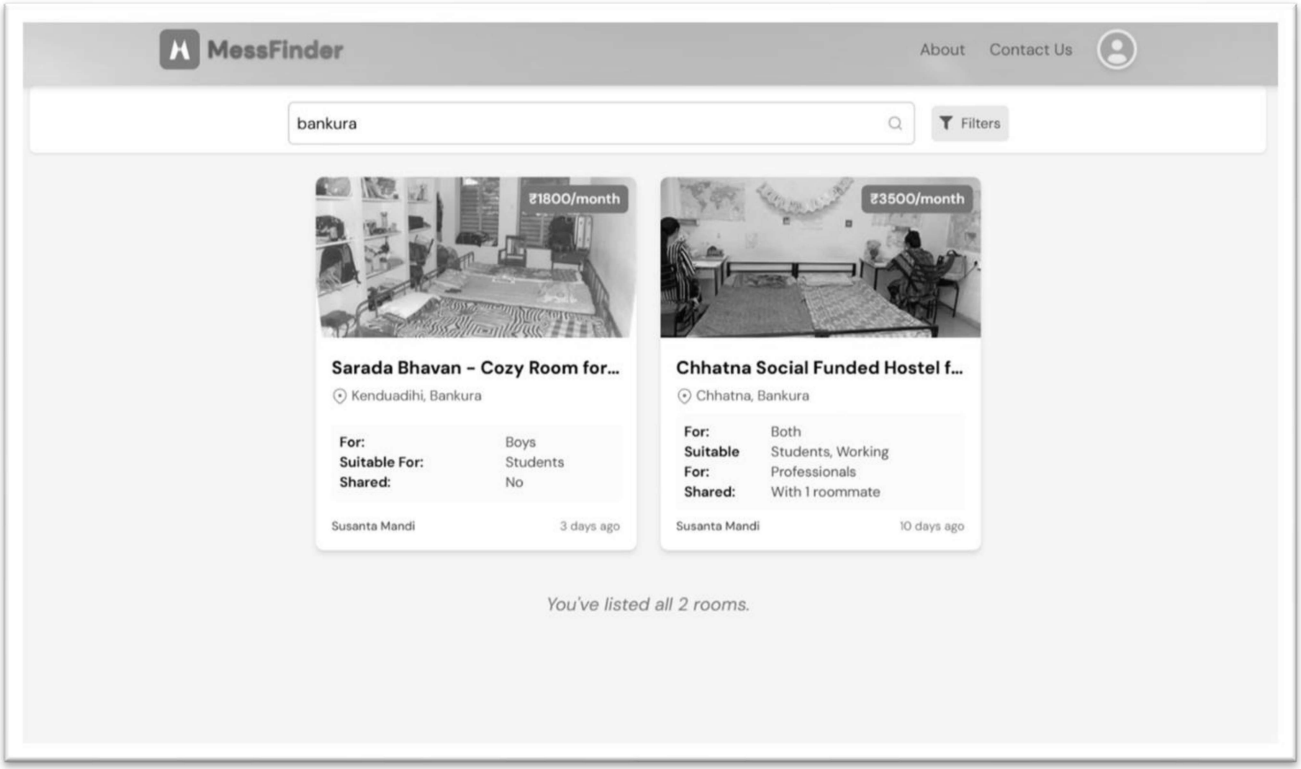
1. Can browse only basic or public listings.
2. Cannot use filters, chat, or save options.
3. No access to profile, dashboard, or private features.

ALL PAGES

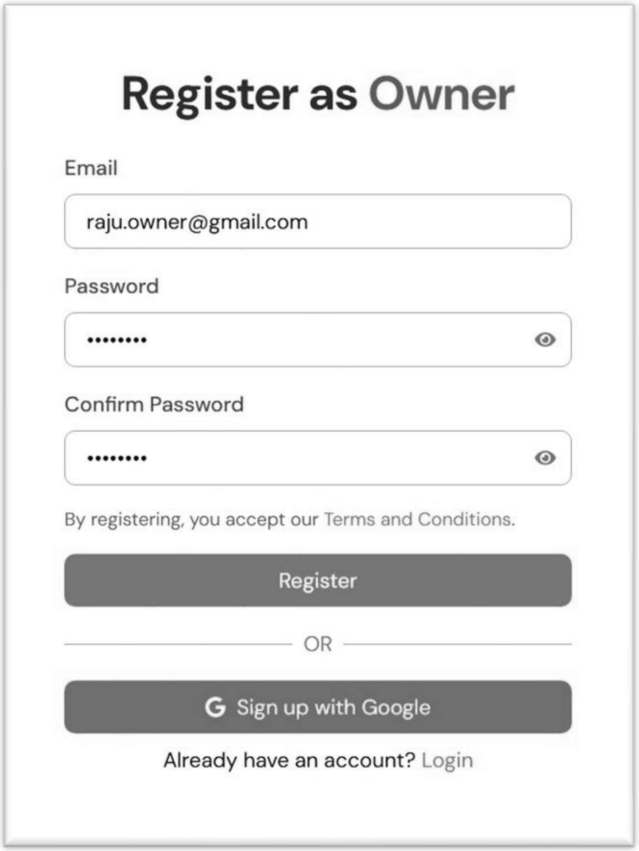
HOME PAGE



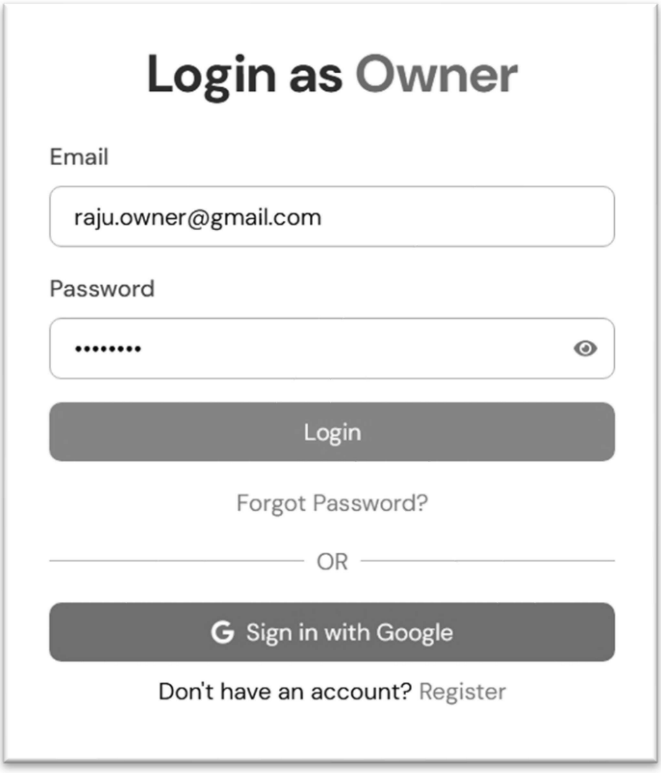
SEARCH RESULT LIST



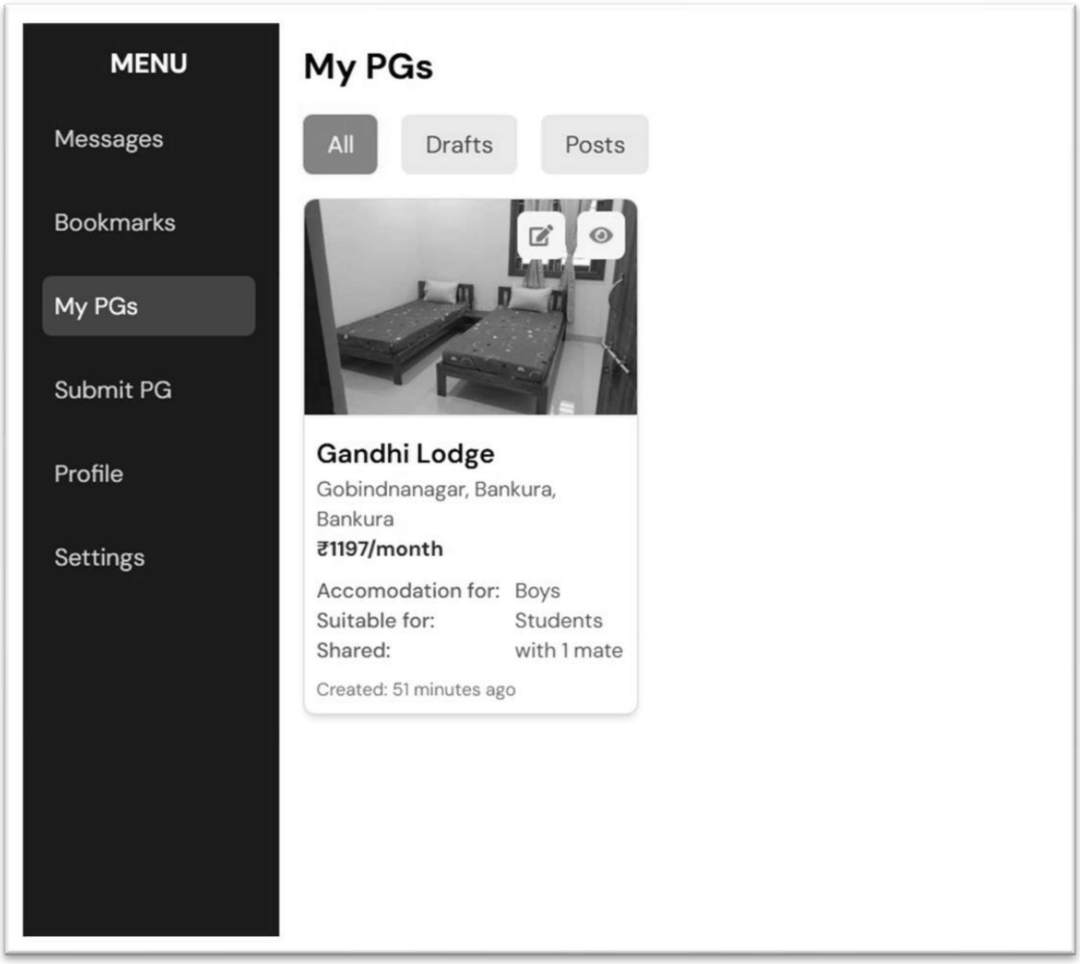
REGISTRATION FORM



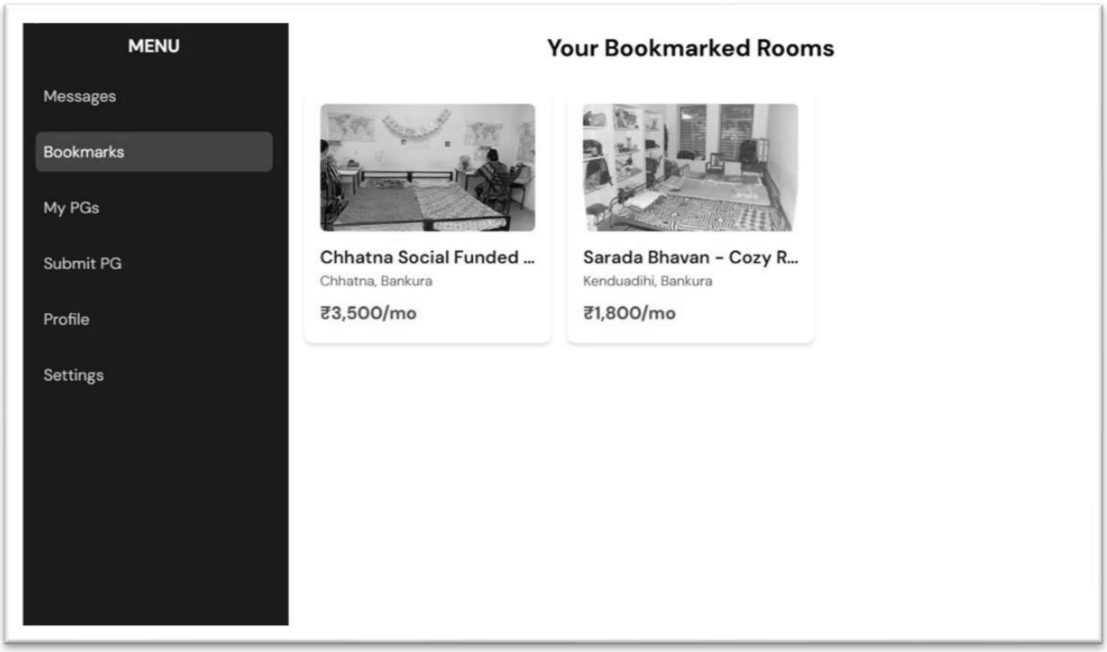
LOGIN FORM



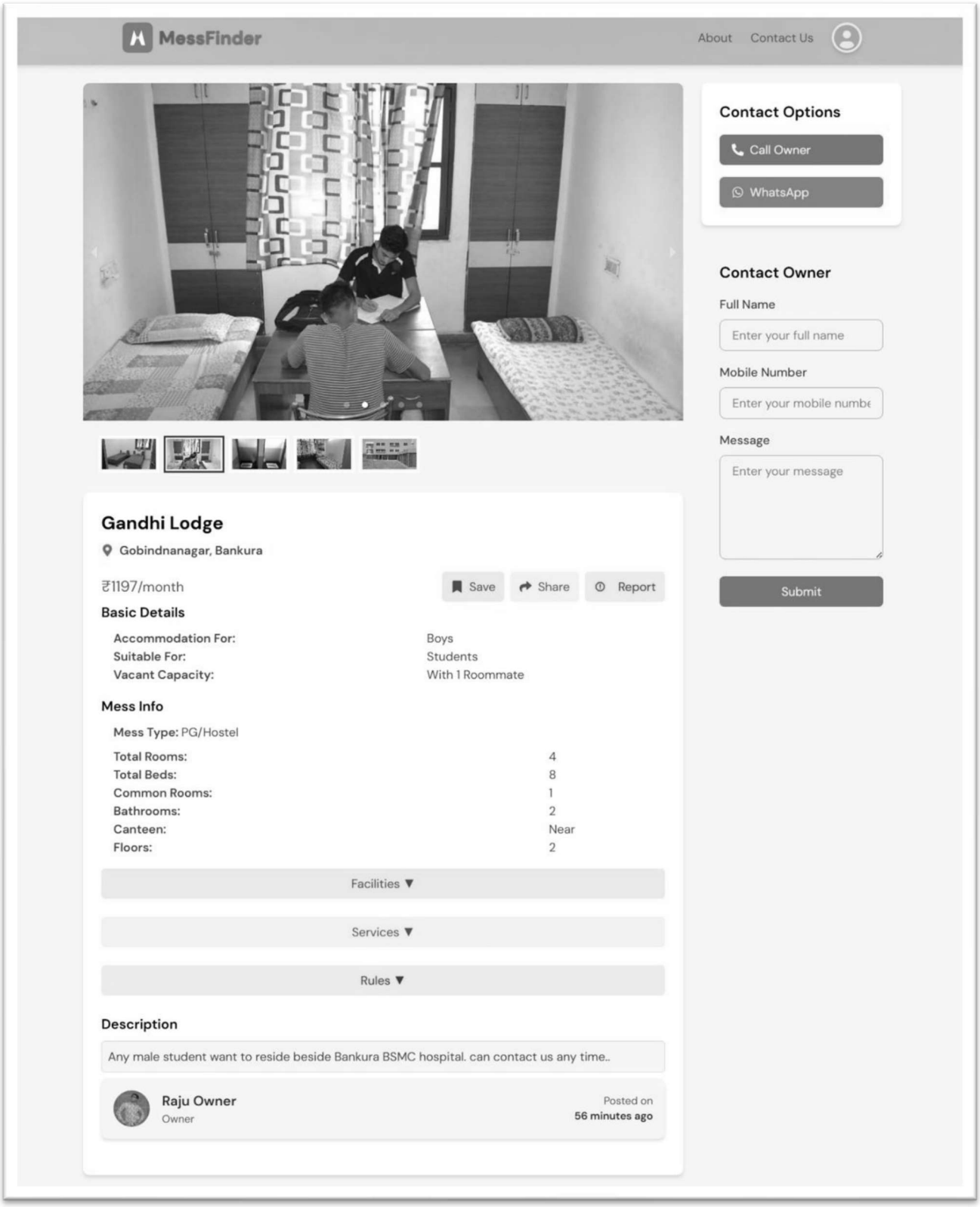
DASHBOARD



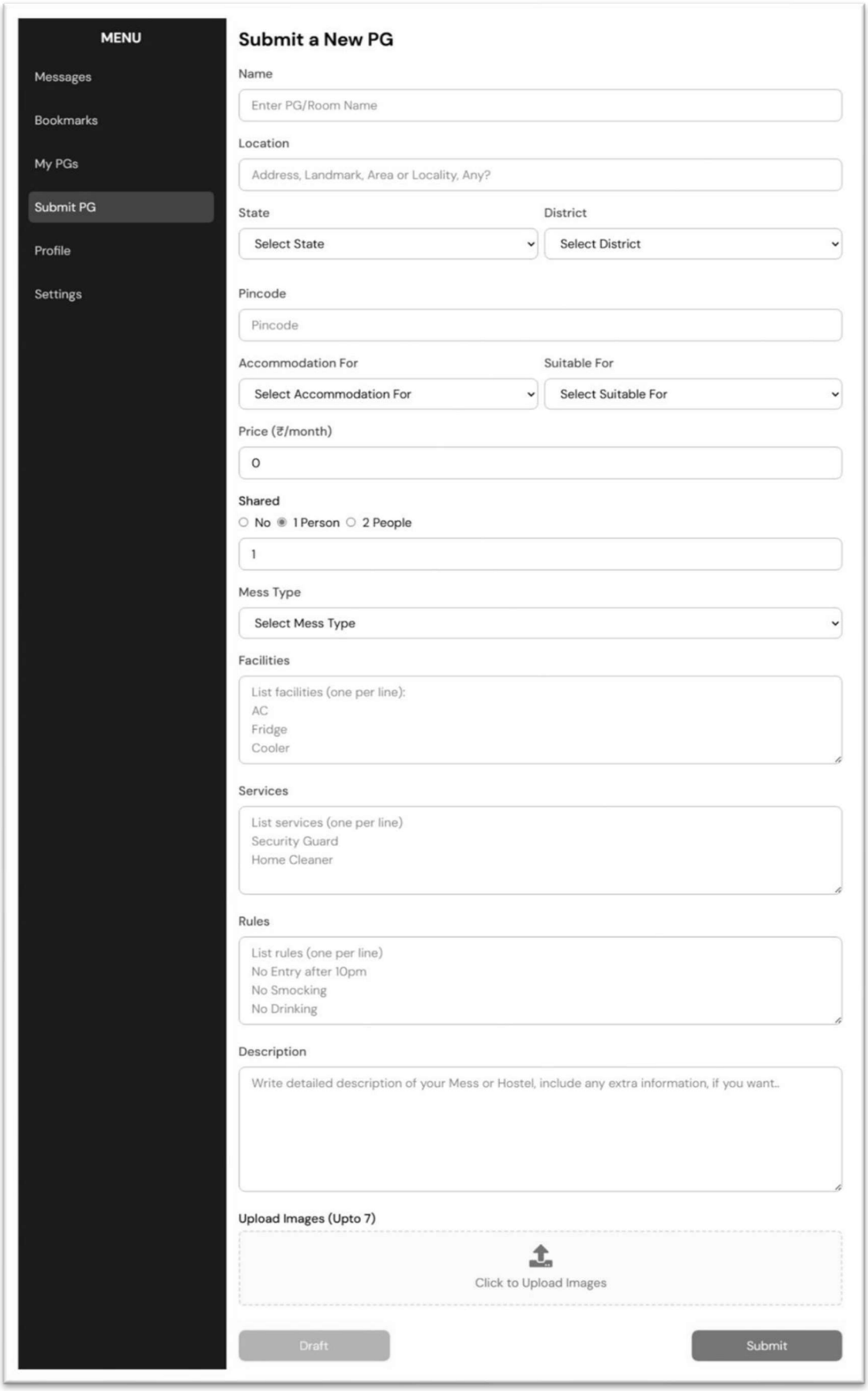
BOOKMARKS PAGE



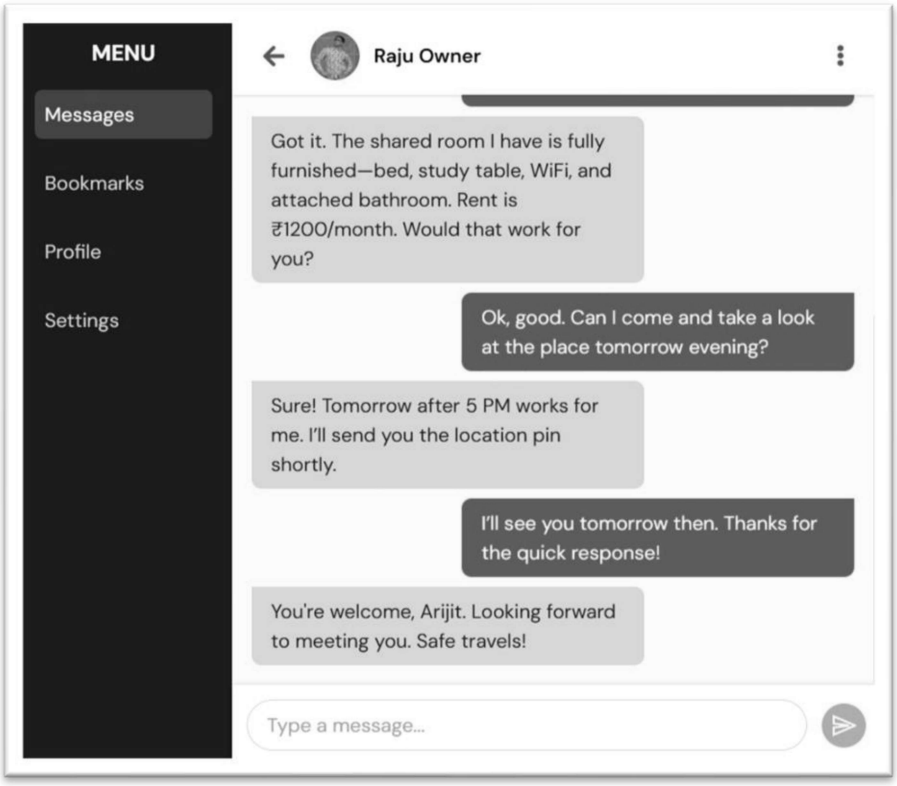
ROOM VIEW


MessFinder
About
Contact Us
Contact Options
Call Owner
WhatsApp
Contact Owner
Full Name
Enter your full name
Mobile Number
Enter your mobile numbe
Message
Enter your message
Submit
Gandhi Lodge
Gobindnanagar, Bankura
₹1197/month
Save
Share
Report
Basic Details
Accommodation For: Boys
Suitable For: Students
Vacant Capacity: With 1 Roommate
Mess Info
Mess Type: PG/Hostel
Total Rooms: 4
Total Beds: 8
Common Rooms: 1
Bathrooms: 2
Canteen: Near
Floors: 2
Facilities ▼
Services ▼
Rules ▼
Description
Any male student want to reside beside Bankura BSMC hospital. can contact us any time..
Raju Owner
Owner
Posted on
56 minutes ago

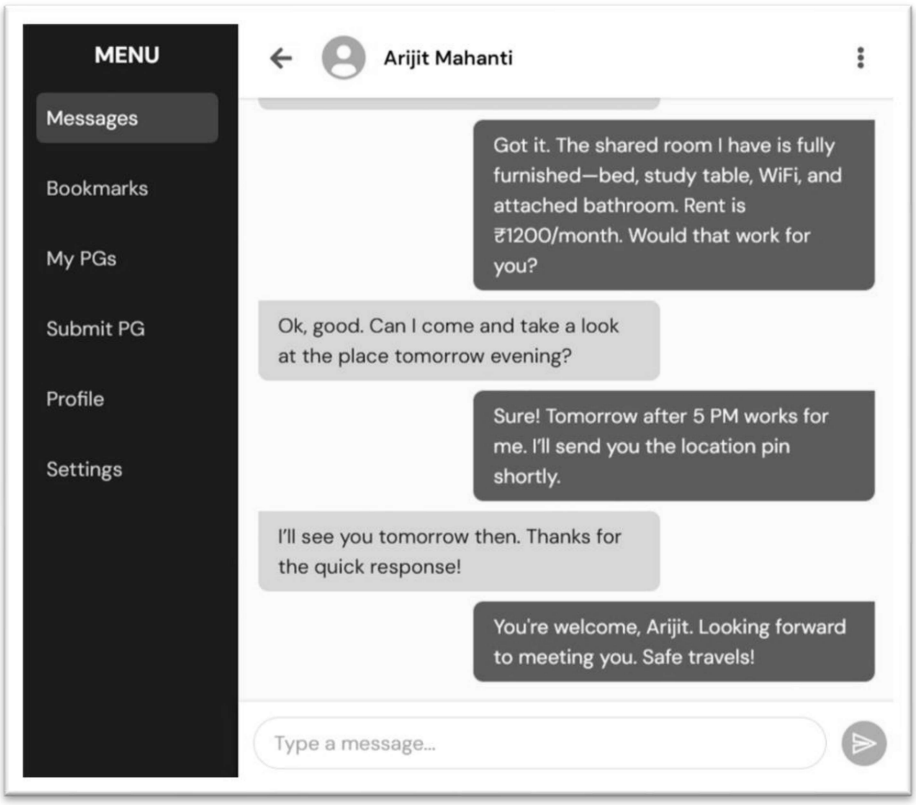
SUBMIT PG FORM



MESSAGE VIEW USER



MESSAGE VIEW OWNER



FOLDER STRUCTURE

The MessFinder project is organized into several folders to keep the code clean and manageable. Below is a simple explanation of each major folder:

```
MessFinder/                  # Main source directory
├── src/                     # Reusable UI and functional components
│   ├── components/          # Error display components
│   │   ├── error/           # Header, Footer, and layout elements
│   │   ├── layout/          # Form components for property listing
│   │   ├── owner-form/      # Generic UI elements like buttons, inputs, etc.
│   │   └── ui/              # Firebase configuration and React context providers
│   ├── context/             # Custom JavaScript modules and utilities
│   ├── module/              # Custom styles
│   │   ├── css/             # JS helpers (districts, nav items, etc.)
│   │   └── js/              # Route-based component structure
│   └── pages/               # Authentication (login, register, reset)
│       ├── auth/            # User dashboard and settings
│       ├── dashboard/       # Home and search
│       ├── home/            # Static info pages (About, Contact, FAQs)
│       ├── info/            # User and public profile
│       ├── profile/         # Room details and search results
│       └── rooms/           # Public assets (favicon, images, etc.)
├── public/                  # Global styles
├── index.css                # Base HTML file
├── index.html               # Main layout structure
├── Layout.jsx               # React app entry point
├── main.jsx                 # App routing configuration
├── routes.jsx               # Scroll-to-top functionality on route change
├── scroll-to-top.jsx        # License file
├── LICENSE                  # Project overview and instructions
├── README.md                # Additional config files (.gitignore, etc.)
└── ...
```

src/

This is the main folder that contains all the core code of the application.

- **components/ –** Reusable parts of the UI, like buttons, forms, header, footer, error pages, etc.

- **context/ –** Contains Firebase setup and authentication logic used across the app.
- **module/ –** Stores helper functions, custom JavaScript files, and reusable logic like pin codes and string functions.
- **pages/ –** Contains all the pages linked to routes like home, login, dashboard, profile, etc.

public/

This folder contains public assets like images, the favicon, and the main index.html file used by the browser.

index.css: The main stylesheet that defines global styles for the application.

Layout.jsx: Defines the overall layout used across pages, combining header, footer, and body content.

main.jsx: Entry point of the React application where the app is initialized.

routes.jsx: Defines all the routes (URLs) and links them to the corresponding pages.

DATABASE STRUCTURE

MessFinder uses **Firebase Realtime Database**, a cloud-hosted **NoSQL** database that stores data in **JSON** format. This enables real-time syncing between users and devices, making it ideal for chat, listings, and user activity tracking.

What is a NoSQL Realtime Database?

A **NoSQL** database stores data as key-value pairs, arrays, or nested objects instead of traditional tables. Firebase Realtime Database is:

- **JSON-based**: Data is stored as a tree-like JSON object.
- **Realtime**: Changes are instantly synced across all clients.
- **Scalable**: Optimized for mobile and web apps.

Structure

- **bookmarks/**: Stores saved room IDs for each user.
- **chats/**: Stores chat data between users and owners.
- **info/**:
  - contactus/: Stores user contact messages.
  - report/: Tracks reports against owners or listings.
- **rooms/**: All the property listing details.
- **userChats/**: Maps chat references for easy access by user or owner.
- **users/**: Stores user profile and role information.

Database Structure – JSON Based

```
mess-finder/
|
├── bookmarks/
|   └── [userId]/
|       └── [bookmarkId]: { createdAt, roomId }
|
|
├── chats/
|   └── [chatId]/
|       ├── messages/
|       |   └── [messageId]: { text, sent, timestamp }
|       ├── ownerId
|       └── userId
|
|
├── info/
|   ├── contactus/
|   |   └── [messageId]: { name, email, message, uid, createdAt }
|   └── report/
|       └── [reportId
]: { reason, description, ownerId, uid, createdAt }
|
├── rooms/
|   └── [roomId]: {
|         name, location, facilities, services, price,
|         ownerId, images[], rules, description,
|         messInfo: { messType, totalRooms, totalBeds, etc. }
|     }
|
├── userChats/
|   └── [userId]/
|       └── [chatRefId]: { chatId, userId or ownerId }
|
|
├── users/
|   └── [userId]: {
|         displayName, email, phoneNumber,
|         role, createdAt, updatedAt
|     }
```

CODE

Since it's not possible to include the entire codebase within 50 pages, we've highlighted the most important parts, focusing on key functionalities like data fetching, display, user authentication, and the overall lifecycle.

Key Files and Their Purpose:

- *index.html* – Base HTML file that loads the React app.
- *main.jsx* – Entry point; sets up providers and renders the app.
- *routes.jsx* – Manages routing and URL-to-component mapping.
- *search.jsx* – Implements PG search and filtering features.
- *login.jsx* – Handles user sign-in.
- *register.jsx* – Handles new user registration.
- *logout.jsx* – Logs out the user and clears session data.
- *messages.jsx* – Manages real-time chat between users.
- *submit-pg.jsx* – Form for submitting/updating PG listings.
- *room.jsx* – Displays detailed room info with owner contact.

/index.html

The **index.html**, from which it is calling the react app. main.jsx to render stuff in the DOM of index.html.

```
<!doctype html>
<html lang="en">
<head>
    <!-- All meta data tags
    and includes -->
  <title>MessFinder - Find Affordable Rooms for Rent</title>
</head>
<body class="relative bg-white bg-[url('/assets/rooms-cover.png')] bg-cover bg-center bg-no-repeat">
  <div id="root" class="relative z-10"></div>
  <!-- the main.jsx is calling the react to load the app. -->
  <script type="module" src="/src/main.jsx"></script>
</body>
</html>
```

/src/main.jsx

The **main.jsx**, is the entry point of react app. which catch a DOM element called root, in which it renders all the component and perform all its functionalities.

```
import { StrictMode } from 'react';
import { createRoot } from 'react-dom/client';
import './index.css';
import { createBrowserRouter, RouterProvider } from 'react-router-dom';
import { FirebaseProvider } from './context/firebase';
import { routes } from './routes';

const router = createBrowserRouter(routes);

createRoot(document.getElementById('root')).render(
  <StrictMode>
    <FirebaseProvider>
      <RouterProvider router={router} />
    </FirebaseProvider>
  </StrictMode>
);
```

/src/routes.jsx

The **routes.jsx**, file defines all the application routes, mapping each URL path to its corresponding component. This enhances user experience by enabling intuitive navigation and clean, meaningful URLs, while also supporting smooth redirections.

```
// routes.jsx
import { Route, createRoutesFromElements } from "react-router-dom";
// Layout & Error
import Layout from './Layout';
import { ErrorPage } from './components/error/';
// Pages: Home & Search
import { HomeSearch } from './pages/home';
import { OwnerPublicProfile } from './pages/profile';
import { SearchResult, RoomDetails } from './pages/rooms';
// Pages: Auth
import { AuthPage, Login, Logout, Register, ResettPassword } from './pages/auth';
// Pages: Info
import { Info, ReportOwner, Contact, Faqs, About, TermsAndConditions } from './pages/info';
// Dashboard Shared
import { Dashboard, ChatApp, Bookmarks, Profile, Settings, MyPGs, SubmitPG } from './pages/dashboard';

export const routes = createRoutesFromElements(
    <Route path="/" element={<Layout />} ErrorBoundary={ErrorPage}>
        {/* Home */}
        <Route index element={<HomeSearch />} />
        <Route path="search" element={<SearchResult />}>
            <Route path=":query" element={<SearchResult />} />
        </Route>
        <Route path="room/:roomId" element={<RoomDetails />} />
        <Route path="profile/:username" element={<OwnerPublicProfile />} />

        {/* Owner Dashboard */}
        <Route path="owner/" element={<Dashboard />}>
            <Route path="messages" element={<ChatApp />} />
            <Route path="bookmarks" element={<Bookmarks />} />
            <Route path="pgs" element={<MyPGs />} />
            <Route path="submit-pg" element={<SubmitPG />} />
            <Route path="submit-pg/:roomId" element={<SubmitPG />} />
            <Route path="profile" element={<Profile />} />
            <Route path="settings" element={<Settings />} />
            <Route path="logout" element={<Logout />} />
        </Route>

        {/* User Dashboard */}
        <Route path="user/" element={<Dashboard />}>
            <Route path="messages" element={<ChatApp />} />
            <Route path="bookmarks" element={<Bookmarks />} />
            <Route path="profile" element={<Profile />} />
            <Route path="settings" element={<Settings />} />
            <Route path="logout" element={<Logout />} />
        </Route>

        {/* Auth */}
        <Route path="auth/" element={<AuthPage />}>
            <Route path="login" element={<Login />} />
            <Route path="register" element={<Register />} />
            <Route path="forget-password" element={<ResettPassword />} />
            <Route path="reset-password" element={<ResettPassword />} />
            <Route path="logout" element={<Logout />} />
        </Route>

        {/* Info */}
        <Route path="info/" element={<Info />}>
            <Route path="contact" element={<Contact />} />
            <Route path="about" element={<About />} />
            <Route path="faqs" element={<Faqs />} />
            <Route path="terms" element={<TermsAndConditions />} />
            <Route path="report" element={<ReportOwner />} />
        </Route>

        {/* Catch-All */}
        <Route path="*" element={<ErrorPage />} />
    </Route>
);
```

/src/pages/rooms/search.jsx

The **search.jsx**, file get query from url or in page search and filters field. And fetch room details from database, with the given query and filters. And show them to user.

```
import { useEffect, useState, useRef } from "react";
import { useParams, useLocation, Link } from 'react-router-dom';
import { useFirebase } from "../../context/firebase";
import { userRTB, roomsRTB } from "../../context/firebase-rtb";
import { formatRelativeTime } from "../../module/js/relative-time";
import { Loader } from "../../components/ui";

import SearchBar from "./SearchBar";
import SearchResultCard from "./SearchResultCard";
import { filterRoomsByCriteria } from "./filter-rooms";

const SearchResult = () => {
    const [filters, setFilters] = useState({
        keyword: "",
        accommodationFor: "",
        suitableFor: "",
        maxPrice: "",
        shared: "",
        sortBy: 0,
    });

    const [locationFilter, setLocationFilter] = useState({
        state: "",
        dist: "",
        pin: ""
    });

    const [results, setResults] = useState([]);
    const [allRooms, setAllRooms] = useState([]); // all room data fetched once
    const [loading, setLoading] = useState(true);
    const [visibleCount, setVisibleCount] = useState(10);
    const [filteredAll, setFilteredAll] = useState([]);

    const params = useParams();
    const location = useLocation();
    const queryFilter = new URLSearchParams(location.search);

    const firebase = useFirebase();
    const { getAllRooms } = roomsRTB(firebase);
    const { getData } = userRTB(firebase);

    // Fetch room data only ONCE on URL change
    useEffect(() => {
        const fetchRooms = async () => {
            setLoading(true);
            setFilters(prev => ({ ...prev, keyword: params.query || "" }));
            setLocationFilter({
                state: queryFilter.get("state") || "",
                dist: queryFilter.get("dist") || "",
                pin: queryFilter.get("pin") || "",
            });
            setFilters((prev) => ({ ...prev, accommodationFor: queryFilter.get("accommodationFor") }));

            try {
                const res = await getAllRooms();
                if (!res) throw new Error("No data found");

                const roomEntries = Object.entries(res);
                const fetchedRooms = await Promise.all(
                    roomEntries.map(async ([roomId, room]) => {
                        try {
                            if (room.status !== "public") {
                                return null; // Exclude non-public rooms
                            }
                            const owner = await getData(room.ownerId);
                            return {
                                roomId,
                                thumbnail: room.images?.[0]?.preview || "",
                                href: `/room/${roomId}`,
                                name: room.name,
                                location: room.location,
                                accommodationFor: room.accommodationFor,
                                suitableFor: room.suitableFor,
                                shared: room.shared,
                                price: room.price,
```

```
                            owner: owner?.displayName || "Owner",
                            createdAt: formatRelativeTime(room.createdAt),
                            state: room.state || "",
                            district: room.district || "",
                            pincode: room.pincode || ""
                        };
                    } catch (err) {
                        console.error("Owner fetch error:", err);
                        return null;
                    }
                })
            );

            const validRooms = fetchedRooms.filter(r => r !== null); // Filters out non-public and failed fetches
            setAllRooms(validRooms);
        } catch (err) {
            console.error("Room fetch error:", err);
            setAllRooms([]);
        } finally {
            setLoading(false);
        }
    };

    fetchRooms();
}, [params.query, location.search]); // triggers on page load / URL change


// Filter only when filters change or rooms are loaded
useEffect(() => {
    const filtered = filterRoomsByCriteria(allRooms, filters, locationFilter);
    setFilteredAll(filtered);
    setResults(filtered.slice(0, 8));
    setVisibleCount(8);
}, [filters, locationFilter, allRooms]);

const handleSearch = () => {
    const filtered = filterRoomsByCriteria(allRooms, filters, locationFilter);
    setFilteredAll(filtered);
    setResults(filtered.slice(0, 8));
    setVisibleCount(8);
};

const handleLoadMore = () => {
    const nextCount = visibleCount + 8;
    const moreResults = filteredAll.slice(0, nextCount);
    setResults(moreResults);
    setVisibleCount(nextCount);
};

const allLoaded = results.length >= filteredAll.length;

if (loading) {
    return (
        <main className="flex flex-col min-h-[calc(100vh-72px)] bg-gray-100 px-4">
            <SearchBar onSearch={handleSearch} filters={filters} setFilters={setFilters} />
            <div className="pt-6 pb-6 flex flex-wrap gap-4 items-center justify-center">
                <Loader text="Searching your query to the database.. please wait.." />
            </div>
        </main>
    );
}

return (
    <main className="flex flex-col min-h-[calc(100vh-72px)] bg-gray-100 px-4 items-center">
        <SearchBar onSearch={handleSearch} filters={filters} setFilters={setFilters} />

        <div className="max-w-[1024px] pt-6 pb-6 flex flex-wrap gap-6 justify-center">
            {results.length > 0 ? (
                results.map((result, index) => (
                    <div key={index} className="w-full max-w-80">
                        <SearchResultCard result={result} />
                    </div>
                ))
            ) : (
                <p className="text-center text-gray-500 text-2xl w-full">No results found.</p>
            )}
        </div>
        <div className="pb-6">
            {results.length > 0 && !allLoaded && (
                <button
                    onClick={handleLoadMore}
```

```
                        className="mt-4 px-4 py-2 bg-blue-500 text-white rounded-md hover:bg-blue-600"
                    >
                        Load More
                    </button>
                )}

                {allLoaded && results.length > 0 && (
                    <p className="mt-4 text-gray-500 text-sm sm:text-lg italic">
                        You've listed all {filteredAll.length} rooms.
                    </p>
                )}
            </div>
        </main>
    );
};

export default SearchResult;
```

/src/pages/auth/login.jsx

The **login.jsx**, Handles user authentication by allowing users to securely log into their accounts using email and password credentials.

```
import { useState, useEffect } from "react";
import { Loader, SetRoleBox } from "../../components/ui";
import { useLocation, useNavigate } from "react-router-dom";
import { signInWithEmailAndPassword } from "firebase/auth";
import { useFirebase } from "../../context/firebase";
import { userRTB } from "../../context/firebase-rtb";
import useGoogleAuth from "../../context/useGoogleAuth";

import LoginForm from "./LoginForm";

const Login = () => {
    const [role, setRole] = useState("");
    const [email, setEmail] = useState("");
    const [password, setPassword] = useState("");
    const [showPassword, setShowPassword] = useState(false);
    const [errorMessage, setErrorMessage] = useState("");
    const [loading, setLoading] = useState(false);

    const firebase = useFirebase();
    const navigate = useNavigate();
    const location = useLocation();

    const { handleGoogleSignIn, authLoading, authError } = useGoogleAuth();

    useEffect(() => {
        if (location.state?.role) setRole(location.state.role);
    }, [location.state]);

    useEffect(() => {
        setErrorMessage(authError || "");
    }, [authError]);

    const handleLogin = async () => {
        setLoading(true);
        setErrorMessage("");
        try {
            const res = await signInWithEmailAndPassword(firebase.auth, email, password);
            const { getData } = userRTB(firebase);
            const userData = await getData(res.user.uid);
            if (userData?.role) {
                navigate(`/${userData.role}/profile`, { state: { from: location } });
            } else {
                setErrorMessage("User role not found. Please contact support.");
            }
        } catch (error) {
            console.error(error);
            setErrorMessage("Invalid email or password. Please try again.");
        }
        setLoading(false);
    };

    const handleGoogleLogin = () => handleGoogleSignIn(role);

    const handleNavigateToRegister = () => {
        navigate("/auth/register", { state: { role } });
    };
```

```
    return (
        <main className="flex flex-col items-center justify-center min-h-[calc(100vh-72px)] px-4">
            {!role ? (
                <SetRoleBox setRole={setRole} />
            ) : (
                loading || authLoading ? (
                    <Loader text="trying to Logging you in. please wait.." />
                ) : (
                    <LoginForm
                        role={role}
                        setRole={setRole}
                        email={email}
                        password={password}
                        showPassword={showPassword}
                        errorMessage={errorMessage}
                        setEmail={setEmail}
                        setPassword={setPassword}
                        setShowPassword={setShowPassword}
                        onLogin={handleLogin}
                        onGoogleLogin={handleGoogleLogin}
                        onNavigateToRegister={handleNavigateToRegister}
                        authLoading={authLoading}
                    />
                )
            )}
        </main>
    );
};

export default Login;
```

/src/pages/auth/register.jsx

The **register.jsx**, Enables new users to create an account by submitting necessary registration details, integrating form validation and Firebase auth.

```
import { useEffect, useState } from "react";
import { useNavigate, useLocation } from "react-router-dom";

import { createUserWithEmailAndPassword } from "firebase/auth";
import { useFirebase } from "../../context/firebase";
import { userRTB } from "../../context/firebase-rtb";
import useGoogleAuth from "../../context/useGoogleAuth";

import RegisterForm from "./RegisterForm";
import SetRoleBox from "./SetRoleBox";

const Register = () => {
    const [role, setRole] = useState("");
    const [email, setEmail] = useState("");
    const [password, setPassword] = useState("");
    const [confirmPassword, setConfirmPassword] = useState("");
    const [showPassword, setShowPassword] = useState(false);
    const [showConfirmPassword, setShowConfirmPassword] = useState(false);
    const [errorMessage, setErrorMessage] = useState("");
    const [loading, setLoading] = useState(false);

    const firebase = useFirebase();
    const navigate = useNavigate();
    const location = useLocation();

    const { handleGoogleSignIn, authLoading, authError } = useGoogleAuth();

    useEffect(() => {
        if (location.state?.role) setRole(location.state.role);
    }, [location.state]);

    useEffect(() => {
        setErrorMessage(authError || "");
    }, [authError]);

    const validateInputs = () => {
        if (!email.trim() || !/\S+@\S+\.\S+/.test(email)) return setError("Invalid Email Address.");
        if (!password) return setError("Password is required.");
        if (password.length < 6) return setError("Password must be at least 6 characters long.");
        if (password !== confirmPassword) return setError("Passwords do not match.");
        setErrorMessage("");
        return true;
    };
```

```
    const setError = (msg) => {
        setErrorMessage(msg);
        return false;
    };
    const handleRegister = async () => {
        setLoading(true);
        setErrorMessage("");
        if (!validateInputs()) return setLoading(false);
        if (!role) return setError("Please select a role (User or Owner) first.") && setLoading(false);

        createUserWithEmailAndPassword(firebase.auth, email, password)
            .then((res) => {
                if (res.user) {
                    const userData = {
                        id: res.user.uid,
                        displayName: res.user.displayName || "",
                        username: "",
                        email: res.user.email,
                        phoneNumber: "",
                        photoURL: res.user.photoURL || "",
                        dob: "",
                        role,
                        about: "",
                    };

                    userRTB(firebase).saveData(userData.id, userData)
                        .then(() => navigate(`/${role}/profile`, { state: { from: location } }))
                        .catch(() => setError("Failed to save user information. Please try again."))
                        .finally(() => setLoading(false));
                } else {
                    setError("Error with user, contact admin..");
                    setLoading(false);
                }
            })
            .catch((error) => {
                if (error.code === "auth/email-already-in-use") {
                    setError("User already exists. Please login.");
                } else {
                    setError("Error registering user. Please try again.");
                }
                setLoading(false);
            });
    };

    const handleGoogleRegister = () => handleGoogleSignIn(role);
    const handleNavigateToLogin = () => navigate('/auth/login', { state: { role } });

    return (
        <main className="flex flex-col items-center justify-center min-h-[calc(100vh-72px)] p-4">
            {!role ? (
                <SetRoleBox setRole={setRole} />
            ) : (
                <RegisterForm
                    role={role} setRole={setRole} email={email} setEmail={setEmail}
                    password={password} setPassword={setPassword}
                    confirmPassword={confirmPassword} setConfirmPassword={setConfirmPassword}
                    showPassword={showPassword} setShowPassword={setShowPassword}
                    showConfirmPassword={showConfirmPassword}
                    setShowConfirmPassword={setShowConfirmPassword}
                    errorMessage={errorMessage} loading={loading}
                    authLoading={authLoading} handleRegister={handleRegister}
                    handleGoogleRegister={handleGoogleRegister} handleNavigateToLogin={handleNavigateToLogin}
                />
            )}
        </main>
    );
};

export default Register;
```

/src/pages/auth/logout.jsx

The **logout.jsx**, Signs out the current user, clears session data, and redirects to the home or login page for secure access control.

```
import { useEffect } from "react";
import { useFirebase } from "../../context/firebase";

const Logout = () => {
    const firebase = useFirebase();
    const handleLogout = () => {
        firebase.auth.signOut();
    };
    useEffect(() => {
        handleLogout();
    }, []);
}

export default Logout;
```

/src/pages/dashboard/messages.jsx

The **messages.jsx**, Implements a real-time chat interface where users can send, receive, and manage messages with other users linked to PG listings.

```
import { useState, useRef, useEffect } from 'react';
import { Link, useLocation, useNavigate } from 'react-router-dom';
import { FaEllipsisV, FaTrash, FaCopy, FaArrowLeft, FaEllipsisH } from 'react-icons/fa';
import { chatRTB, userRTB } from '../../context/firebase-rtb';
import { useFirebase } from '../../context/firebase';

const ChatApp = () => {
    const firebase = useFirebase();
    const chat = chatRTB(firebase);
    const user = userRTB(firebase);
    const location = useLocation();
    const navigate = useNavigate();
    const chatWindowRef = useRef(null);

    const [chats, setChats] = useState([]);
    const [selectedChatId, setSelectedChatId] = useState(null);
    const [newMessage, setNewMessage] = useState('');
    const [showHeaderOptions, setShowHeaderOptions] = useState(false);
    const [popupMenu, setPopupMenu] = useState({ visible: false, x: 0, y: 0, chatId: null, messageIndex: null });
    const [hasAutoSelectedChat, setHasAutoSelectedChat] = useState(false);
    const [currentUserId, setCurrentUserId] = useState(null);

    const selectedChat = chats.find(chat => chat.id === selectedChatId);

    // Get the logged-in user ID
    useEffect(() => {
        const unsubscribe = firebase.auth.onAuthStateChanged(user => {
            setCurrentUserId(user?.uid || null);
        });
        return () => unsubscribe();
    }, []);

    // Fetch user's chats and listen for message updates
    useEffect(() => {
        if (!currentUserId) return;

        (async () => {
            try {
                const userChats = await chat.getUserChats(currentUserId);
                const chatEntries = Object.entries(userChats || {});

                const chatDetails = await Promise.all(chatEntries.map(async ([chatId, chatData]) => {
                    let chatDoc = await chat.getChat(chatId);
                    if (!chatDoc) {
                        await chat.createChat(chatData.ownerId, chatData.userId, chatId);
                        chatDoc = await chat.getChat(chatId);
                    }

                    const otherUserId = chatDoc.ownerId === currentUserId ? chatDoc.userId : chatDoc.ownerId;
                    const otherUser = await user.getData(otherUserId);

                    return {
                        id: chatId,
                        name: otherUser?.displayName || "Unknown",
```

```
                    username: otherUser?.username || "",
                    photoURL: otherUser?.photoURL || "/assets/avatar-default.svg",
                    messages: [],
                    ownerId: chatDoc.ownerId,
                    userId: chatDoc.userId,
                };
            }));

            setChats(chatDetails);

            // Subscribe to messages for each chat
            chatDetails.forEach(chatObj => {
                chat.onChatMessages(chatObj.id, messages => {
                    setChats(prevChats =>
                        prevChats.map(c => c.id === chatObj.id ? { ...c, messages } : c)
                    );
                });
            });
        } catch (error) {
            console.error("Failed to load chats:", error);
        }
    })();
}, [currentUserId]);

// Auto-select chat if chatId is provided via location.state
useEffect(() => {
    if (!hasAutoSelectedChat && location.state?.chatId && chats.length > 0) {
        const matchedChat = chats.find(c => c.id === location.state.chatId);
        if (matchedChat) {
            setSelectedChatId(matchedChat.id);
            setHasAutoSelectedChat(true);
        }
    }
}, [chats, location.state?.chatId, hasAutoSelectedChat]);

// Scroll chat window to bottom when new messages arrive
useEffect(() => {
    if (chatWindowRef.current) {
        chatWindowRef.current.scrollTop = chatWindowRef.current.scrollHeight;
    }
}, [selectedChat?.messages]);

// Hide popup menu on outside click
useEffect(() => {
    const hidePopup = () => {
        if (popupMenu.visible) {
            setPopupMenu({ visible: false, x: 0, y: 0, chatId: null, messageIndex: null });
        }
    };
    window.addEventListener('click', hidePopup);
    return () => window.removeEventListener('click', hidePopup);
}, [popupMenu.visible]);

// Chat handlers
const handleSelectChat = (id) => {
    setSelectedChatId(id);
    setShowHeaderOptions(false);
};

const handleBack = () => {
    setSelectedChatId(null);
    setShowHeaderOptions(false);
    setPopupMenu({ visible: false, x: 0, y: 0, chatId: null, messageIndex: null });
};

const handleSendMessage = async () => {
    if (!newMessage.trim() || !selectedChat) return;

    try {
        const isSenderOwner = selectedChat.ownerId !== currentUserId;
        await chat.sendMessage(selectedChat.id, newMessage.trim(), isSenderOwner);
        setNewMessage('');
    } catch (error) {
        console.error('Failed to send message:', error);
    }
};

const handleFormSubmit = (e) => {
    e.preventDefault();
    handleSendMessage();
};
```

```
    const toggleHeaderOptions = () => setShowHeaderOptions(prev => !prev);

    const handleReportChat = () => {
        if (!selectedChat || !currentUserId) return;
        const otherUserId = selectedChat.ownerId === currentUserId ? selectedChat.userId : selectedChat.ownerId;
        navigate(`/info/report/`, { state: { userId: otherUserId, username: selectedChat.username } });
        setShowHeaderOptions(false);
    };

    const handleMessageClick = (e, chatId, index) => {
        e.preventDefault();
        const chatObj = chats.find(c => c.chatId === chatId);
        const message = chatObj?.messages[index];
        const isCurrentUserOwner = chatObj?.ownerId === currentUserId;

        // Only allow popup for messages sent by the current user
        if ((isCurrentUserOwner && message?.sent) || (!isCurrentUserOwner && !message?.sent)) return;

        const rect = e.currentTarget.getBoundingClientRect();
        setPopupMenu({
            visible: true,
            x: rect.right + window.scrollX,
            y: rect.top + window.scrollY,
            chatId,
            messageIndex: index,
        });
    };

    const handleDeleteMessage = async () => {
        if (!popupMenu.visible) return;
        try {
            await chat.deleteMessage(popupMenu.chatId, popupMenu.messageIndex);
        } catch (error) {
            console.error("Failed to delete message:", error);
        }
        setPopupMenu({ visible: false, x: 0, y: 0, chatId: null, messageIndex: null });
    };

    const handleCopyMessage = () => {
        if (!popupMenu.visible) return;
        const chatObj = chats.find(c => c.id === popupMenu.chatId);
        const message = chatObj?.messages[popupMenu.messageIndex];
        if (message) navigator.clipboard.writeText(message.text);
        setPopupMenu({ visible: false, x: 0, y: 0, chatId: null, messageIndex: null });
    };

    return (
        <div className="flex flex-col h-[calc(100vh-120px)] w-full mx-auto rounded-lg shadow-md bg-white select-none
custom-scrollbar">
            {!selectedChat ? (
                <ChatList chats={chats} onSelectChat={handleSelectChat} />
            ) : (
                <ChatWindow
                    selectedChat={selectedChat}
                    currentUserId={currentUserId}
                    showHeaderOptions={showHeaderOptions}
                    toggleHeaderOptions={toggleHeaderOptions}
                    handleBack={handleBack}
                    handleReportChat={handleReportChat}
                    chatWindowRef={chatWindowRef}
                    handleMessageClick={handleMessageClick}
                    handleFormSubmit={handleFormSubmit}
                    newMessage={newMessage}
                    setNewMessage={setNewMessage}
                    handleDeleteMessage={handleDeleteMessage}
                    handleCopyMessage={handleCopyMessage}
                    popupMenu={popupMenu}
                />
            )}
        </div>
    );
};

export default ChatApp;
```

/src/pages/dashboard/owner/submit-pg.jsx

The **submit-pg.jsx**, Provides a dynamic form for PG owners to add or edit property listings, with support for image upload, validation, and preview.

```
import { useEffect, useState } from "react";
import { useLocation, useParams } from 'react-router-dom';
import { InputField, Dropdown, Alert, Loader } from "../../../components/ui";
import { isAgeAboveLimit, validateIndianPhoneNumber, validateUsername } from "../../../module/js/string";
import { onAuthStateChanged } from "firebase/auth";
import { statesAndDistricts } from '../../../module/js/district-pin';
import { useFirebase } from "../../../context/firebase"
import { roomStorage } from "../../../context/firebase-storage";
import { userRTB, roomsRTB } from "../../../context/firebase-rtb"
import { ImageUpload, AccommodationDetails, MessDetails, FormButtons, DescriptiveDetails } from
'../../../components/owner-form';

const defaultData = {
    name: '', location: '', state: '', district: '', pincode: '', accommodationFor: 'Boys',
    suitableFor: "Students", price: 0, shared: 1,
    messInfo: {
        messType: "Home", totalRooms: 1, totalBeds: 1, totalCRooms: 0,
        totalBathrooms: 1, canteenAvailability: "Near", totalFloors: 1,
    },
    facilities: "", services: "", rules: "", description: "", images: [], status: "draft",
}

const SubmitPG = () => {
    const [formData, setFormData] = useState({ ...defaultData });

    const params = useParams();

    const firebase = useFirebase();
    const location = useLocation();

    const [selectedState, setSelectedState] = useState('');
    const [selectedDistrict, setSelectedDistrict] = useState('');
    const [pincodeError, setPincodeError] = useState("");
    const [uid, setUID] = useState("");
    const [roomId, setRoomId] = useState("");
    const [authReady, setAuthReady] = useState(false);
    const [uploading, setUploading] = useState(false);
    const [loading, setLoading] = useState(true);
    const [updateDone, setUpdateDone] = useState(false);
    const [errorMessage, setErrorMessage] = useState(false);

    useEffect(() => {
        const id = params?.roomId || "";
        setRoomId(id);
        if (!id) {
            setFormData({ ...defaultData });
        }
        setErrorMessage(false)
        setUpdateDone(false)
    }, [params?.roomId, location.pathname]);

    useEffect(() => {
        const unregister = onAuthStateChanged(firebase.auth, async (user) => {
            const { getData } = userRTB(firebase);
            if (!user) return setErrorMessage("User not logged in. Please log in and try again.");

            setUID(user.uid);
            try {
                const res = await getData(user.uid);
                if (!validateIndianPhoneNumber(res.phoneNumber)) return setErrorMessage("Invalid or missing Indian
phone number.");
                if (!user.emailVerified) return setErrorMessage("Email not verified. Please verify your email
address.");
                if (!validateUsername(res.username)) return setErrorMessage("Invalid or missing username.");
                if (!isAgeAboveLimit(res.dob)) return setErrorMessage("You must be over 18 to submit a room.");

                setAuthReady(true);
            } catch {
                setErrorMessage("Error fetching user data. Please try again later.");
            }
        });

        return () => unregister(); // Cleanup on unmount
    }, [firebase.auth]);
```

```
    useEffect(() => {
        if (!authReady || !roomId) {
            setLoading(false);
            return;
        }
        setLoading(true);
        if (uploading) return;

        const fetchRoomDetails = async () => {
            try {
                const user = firebase.auth.currentUser;
                if (!user) return;

                const { getRoom } = roomsRTB(firebase);
                await getRoom(roomId)
                    .then((roomDetails) => {
                        if (roomDetails.ownerId == user.uid) {
                            setFormData(roomDetails);
                        } else {
                            setErrorMessage("You can't edit, someone else's data. please be real, and don't involve in
bad movement..")
                        }
                    }).catch(() => {
                        setErrorMessage("Invalid Room Id, plesae check your room id..")
                    })
            } catch (error) {
                console.log("Error fetching room:", error);
                setErrorMessage("Error fetching room.. Please report this to admin.");
            }
            setLoading(false);
        };

        fetchRoomDetails();
    }, [authReady, roomId, firebase]);

    // Other form handlers, can't show due to length limit of pdf (brevity).

    const { uploadRoomImages } = roomStorage();

    const submitFormData = async () => {
        setLoading(true);
        const validateInputs = verifyInputs(formData);
        if (validateInputs.status) {
            try {
                setUploading(true);
                const { saveRoom } = roomsRTB(firebase);

                let downloadUrls;
                let currentRoomId = roomId;

                if (!currentRoomId) {
                    const result = await saveRoom(formData, null);
                    currentRoomId = result.roomId;
                    setRoomId(currentRoomId); // update state for UI or future calls
                }

                // Now currentRoomId is always valid
                downloadUrls = await uploadRoomImages(currentRoomId, formData.images, (index, progress) => {
                });

                const updatedImages = downloadUrls.map((url) => ({ preview: url }));
                const updatedFormData = { ...formData, images: updatedImages };

                setFormData(updatedFormData);

                // Save updated formData with image URLs
                await saveRoom(updatedFormData, currentRoomId);

                setUpdateDone("You can see your room list, on mypgs..");
                setUploading(false);
            } catch (error) {
                console.error("Failed to save room:", error);
                setErrorMessage("Error saving room. Please try again.");
            }
        } else {
            setErrorMessage(validateInputs.message)
            setTimeout(() => {
                setErrorMessage("")
            }, 3000);
        }
        setLoading(false);
    };
```

```
    const handleSubmit = () => {
        formData.status = "public";
        setFormData((prev) => ({ ...prev, status: "public" }))
        submitFormData();
    };

    const handleDraft = () => {
        formData.status = "draft";
        setFormData((prev) => ({ ...prev, status: "draft" }))
        submitFormData();
    }

    const { deleteRoomImages } = roomStorage();

    const handleDelete = () => {
        const { deleteRoom } = roomsRTB(firebase);
        deleteRoom(roomId, uid)
            .then((res) => {
                if (res.status) {
                    deleteRoomImages(roomId)
                        .then(() => {
                            setUpdateDone("Deleted room successfully, enjoy..")
                        }).catch(() => {
                            setErrorMessage("Error: while deleting room images from storage, please contact admin..")
                        })
                } else {
                    setUpdateDone(res.message)
                }
            }).catch((error) => {
                console.log(error);
                setErrorMessage("Error: while deleting your room, please retry.")
            });
    }

    if (loading) return <Loader text="Loading, Please wait." />;
    if (updateDone) return <Alert type="success" header="Updating Room Successfully." message={updateDone} />;
    if (errorMessage) return <Alert type="error" header="Error Occured, Read below." message={errorMessage} />;

    return (
        <div className="w-full mx-auto p-4 bg-white shadow-md rounded-md">
            <h2 className="text-2xl font-bold mb-4">{roomId ? `Edit Your Room` : "Submit a New PG"}</h2>
            <div className="space-y-4">
                {/* ... All Other Input Fields with with calling handler function */}
                <FormButtons onDelete={roomId ? handleDelete : false} onDraft={handleDraft} onSubmit={handleSubmit} />
            </div>
        </div>
    );
};

export default SubmitPG;
```

/src/pages/rooms/room.jsx

The **room.jsx**, Displays full details of a selected PG room, including images, facilities, pricing, and owner contact options for interested users.

```
import { useState, useEffect } from "react";
import "react-responsive-carousel/lib/styles/carousel.min.css";
import { userRTB, roomsRTB, bookmarksRTB, chatRTB } from "../../context/firebase-rtb";
import { useParams } from "react-router-dom";
import { useFirebase } from "../../context/firebase";
import { Alert, Loader } from "../../components/ui"
import ImageCarousel from './ImageCarousel';
import RoomDetailsCard from './RoomDetailsCard';
import ContactButtons from './ContactButtons';
import ContactForm from './ContactForm';

// Main RoomDetails Component
const RoomDetails = () => {
    const [roomInfo, setRoomInfo] = useState({});
    const [ownerInfo, setOwnerInfo] = useState({})

    const params = useParams();

    const [errorMessage, setErrorMessage] = useState(false);
    const [loading, setLoading] = useState(true);
    const firebase = useFirebase();
    const { getRoom } = roomsRTB(firebase);
    const { getData } = userRTB(firebase);
```

```
    const [user, setUser] = useState(false);

    useEffect(() => {
        const roomId = params?.roomId;
        if (!roomId) {
            setErrorMessage("Invalid room ID.");
            return;
        }

        setLoading(true);
        getRoom(roomId)
            .then((res) => {
                const currentUser = firebase.auth.currentUser;
                setUser(currentUser);
                if (res.status === "draft") {
                    if (!currentUser || res.ownerId !== currentUser.uid) {
                        setErrorMessage("The Room is in draft mode, and you are not authorised to view this.");
                        return;
                    }
                }
                setRoomInfo(res);
            })
            .catch(() => {
                setErrorMessage("Error while fetching Room Details from server.");
            })
            .finally(() => {
                setLoading(false);
            });
    }, [firebase, params.roomId]);

    useEffect(() => {
        if (roomInfo.ownerId) {
            getData(roomInfo.ownerId)
                .then((owner) => {
                    setOwnerInfo({
                        id: owner.id, name: owner.displayName,
                        username: owner.username, photoURL: owner.photoURL,
                        phoneNumber: owner.phoneNumber, email: owner.email,
                    });
                });
        }
    }, [roomInfo.ownerId]);

    return (
        <div className="bg-gray-100 w-full min-h-[calc(100vh-80px)] mx-auto h-full px-4 sm:px-6 py-6 justify-center
flex">
            {errorMessage ? (
                <Alert type="error" message={errorMessage} />
            ) : loading ? (
                <Loader />
            ) : (
                <div className="max-w-[1080px] w-full flex flex-col sm:flex-row gap-6 justify-center">
                    {/* Left Section: Room Details */}
                    <div className="flex-1 sm:flex-[4] lg:flex-[6] w-full">
                        {/* Image Carousel */}
                        <div>
                            <ImageCarousel images={roomInfo.images} />
                        </div>

                        {/* Room Details */}
                        <RoomDetailsCard roomId={params.roomId} roomInfo={roomInfo} ownerInfo={ownerInfo} />
                    </div>

                    {/* Right Section: Contact Details */}
                    <div className="flex-1 sm:flex-2">
                        <ContactButtons ownerInfo={ownerInfo} />
                        <ContactForm ownerInfo={ownerInfo} userInfo={user} />
                    </div>
                </div>
            )}
        </div>
    );
};

export default RoomDetails;
```

BACKEND AND DATABASE VIA FIREBASE

/src/context/firebase-config.js

The **firebase-config.jsx**, It defines environment-specific Firebase project configuration using secure import.meta.env variables. This separates sensitive credentials from code and enables flexible deployment across environments (development, staging, production).

```
export const firebaseConfig = {
  apiKey: import.meta.env.VITE_FIREBASE_API_KEY,
  authDomain: import.meta.env.VITE_FIREBASE_AUTH_DOMAIN,
  databaseURL: import.meta.env.VITE_FIREBASE_DATABASE_URL,
  projectId: import.meta.env.VITE_FIREBASE_PROJECT_ID,
  storageBucket: import.meta.env.VITE_FIREBASE_STORAGE_BUCKET,
  messagingSenderId: import.meta.env.VITE_FIREBASE_MESSAGING_SENDER_ID,
  appId: import.meta.env.VITE_FIREBASE_APP_ID,
  measurementId: import.meta.env.VITE_FIREBASE_MEASUREMENT_ID,
};
```

/src/context/firebase.jsx

The **firebase.jsx**, Initializes Firebase services (Auth, Realtime Database, Storage) and provides them via React Context (FirebaseContext) for global access throughout the app. It simplifies Firebase integration and promotes modular, reusable access through the useFirebase() hook.

```
import { createContext, useContext } from "react";
import { initializeApp } from "firebase/app";
import { getAuth } from "firebase/auth";
import { getStorage } from "firebase/storage";
import { getDatabase } from "firebase/database";

import { firebaseConfig } from "./firebase-config"; // Import the firebaseConfig from the separate file

// Initialize Firebase
const firebaseApp = initializeApp(firebaseConfig);
const firebaseAuth = getAuth(firebaseApp);
const firebaseStorage = getStorage(firebaseApp);
const firebaseDB = getDatabase(firebaseApp)

// Create a Firebase context
const FirebaseContext = createContext();

export const FirebaseProvider = ({ children }) => {
    const auth = firebaseAuth;
    const storage = firebaseStorage;
    const db = firebaseDB;
    return (
        <FirebaseContext.Provider value={{
            auth,
            storage,
            db
        }}>
            {children}
        </FirebaseContext.Provider>
    );
};

// Custom hook to use Firebase
export const useFirebase = () => {
    return useContext(FirebaseContext);
};
```

/src/context/firebase-rtb.jsx

The **firebase-rtb.jsx**, Provides helper functions to interact with Firebase Realtime Database for both users and PG room listings. It includes methods to create, update, delete, and fetch data, as well as validate unique usernames and handle authentication-based operations securely.

```
import { ref, push, get, remove, update, serverTimestamp, onValue, set } from "firebase/database";
import { validateUsername } from "../module/js/string";

const userRTB = (firebase) => {
    const saveData = async (id, data) => {
        try {
            if (!id || !(data.email || data.id)) throw new Error("Missing required user information.");
            const dbRef = ref(firebase.db, `/mess-finder/users/${id}`);
            const snapshot = await get(dbRef);
            const exists = snapshot.exists();
            const timestampData = { updatedAt: serverTimestamp(), ...(exists ? {} : { createdAt: serverTimestamp()
}),};
            const newData = { ...data, ...timestampData, };
            await update(dbRef, newData); // use update to preserve existing data and apply server timestamps
            return { status: true, message: exists ? "Data updated." : "User created." };
        } catch (error) {
            throw error;
        }
    };
    const uploadPhoto = async (id, photoURL) => {
        try {
            if (!id || !photoURL) throw new Error("Missing user ID or photo URL.");
            const dbRef = ref(firebase.db, `/mess-finder/users/${id}`);
            const updateData = {
                photoURL: photoURL,
                updatedAt: serverTimestamp(),
            };
            await update(dbRef, updateData);
            return { status: true, message: "Profile photo updated." };
        } catch (error) {
            throw error;
        }
    };
    const deleteData = async (id) => {
        try {
            const dbRef = ref(firebase.db, `/mess-finder/users/${id}`);
            await remove(dbRef);
            return { status: true, message: "Deleted Successfully" };
        } catch (error) {
            throw error; // Throw the error to allow .catch() to handle it
        }
    };
    const getData = async (id) => {
        try {
            const dbRef = ref(firebase.db, `/mess-finder/users/${id}`);
            const snapshot = await get(dbRef);
            if (snapshot.exists())
                return snapshot.val();
            else
                return null;
        } catch (error) {
            throw error; // Throw the error to allow .catch() to handle it
        }
    };
    const getAllUsers = async () => {
        try {
            const dbRef = ref(firebase.db, "/mess-finder/users");
            const snapshot = await get(dbRef);
            return snapshot.exists() ? snapshot.val() : null;
        } catch (error) {
            throw error;
        }
    };
    const userExists = async (username) => {
        const valid = validateUsername(username);
        if (!valid.status) return { valid: false, available: false, reason: valid.message };
        try {
            const allUsersRef = ref(firebase.db, "/mess-finder/users");
            const snapshot = await get(allUsersRef);
            if (!snapshot.exists()) return { valid: true, available: true }; // No users yet, username is available
            const users = snapshot.val();
            for (const id in users) {
                if (users[id].username === username) return { valid: true, available: false, reason: "Username already
taken." };
```

```
            }
            return { valid: true, available: true };
        } catch (error) {
            console.error("Error checking username existence:", error);
            throw error;
        }
    };
    return { saveData, uploadPhoto, deleteData, getData, getAllUsers, userExists };
};
const roomsRTB = (firebase) => {
    const baseRef = ref(firebase.db, "/mess-finder/rooms");
    const saveRoom = async (roomData, roomId = null) => {
        try {
            const currentUser = firebase.auth.currentUser;
            if (!currentUser) throw new Error("User not authenticated.");
            const ownerId = currentUser.uid;
            const timestampData = { updatedAt: serverTimestamp(),
                ...(roomId ? {} : { createdAt: serverTimestamp() }),
            };
            const newData = { ...roomData, ownerId, ...timestampData,};
            let roomRef;
            if (roomId) {
                roomRef = ref(firebase.db, `/mess-finder/rooms/${roomId}`);
                await update(roomRef, newData);
                return { status: true, message: "Room updated.", roomId };
            } else {
                roomRef = push(baseRef); // generate auto ID
                await set(roomRef, newData);
                return { status: true, message: "Room created.", roomId: roomRef.key };
            }
        } catch (error) {
            throw error;
        }
    };

    const deleteRoom = async (roomId, ownerId) => {
        try {
            const roomRef = ref(firebase.db, `/mess-finder/rooms/${roomId}`);
            const snapshot = await get(roomRef);
            if (!snapshot.exists())
                return { status: false, message: "Room not found." };
            const roomData = snapshot.val();
            if (roomData.ownerId !== ownerId)
                return { status: false, message: "Unauthorized: Only the owner can delete the room." };
            await remove(roomRef);
            return { status: true, message: "Room deleted." };
        } catch (error) {
            throw error;
        }
    };


    const getRoom = async (roomId) => {
        try {
            const roomRef = ref(firebase.db, `/mess-finder/rooms/${roomId}`);
            const snapshot = await get(roomRef);
            return snapshot.exists() ? snapshot.val() : null;
        } catch (error) {
            throw error;
        }
    };
    const getAllRooms = async () => {
        try {
            const snapshot = await get(baseRef);
            return snapshot.exists() ? snapshot.val() : {};
        } catch (error) {
            throw error;
        }
    };
    return { saveRoom, deleteRoom, getRoom, getAllRooms };
};

export { userRTB, roomsRTB };
```

/src/context/firebase-storage.jsx

The **firebase-storage.jsx**, Provides utility functions to handle Firebase Storage operations related to user profile images and room listing images. It includes upload and delete functionalities with real-time progress tracking, making it easy to manage image assets for both users and PG rooms.

```
import {
    ref,
    uploadBytesResumable,
    getDownloadURL,
    deleteObject,
    listAll
} from "firebase/storage";
import { useFirebase } from "./firebase";

const userStorage = () => {
    const firebase = useFirebase();

    const uploadProfileImage = async (userId, file, onProgress) => {
        if (!file) {
            throw new Error("No file provided for upload.");
        }

        const storageRef = ref(firebase.storage, `mess-finder/users/${userId}/profile.png`);

        // Create a reference to the file to be uploaded
        const uploadTask = uploadBytesResumable(storageRef, file);

        return new Promise((resolve, reject) => {
            uploadTask.on(
                "state_changed",
                (snapshot) => {
                    // Calculate progress
                    const progress = (snapshot.bytesTransferred / snapshot.totalBytes) * 100;
                    console.log(`Upload is ${progress}% done`);
                    if (onProgress) {
                        onProgress(progress); // Call the progress callback
                    }
                },
                (error) => {
                    // Handle unsuccessful uploads
                    reject(new Error("Upload failed: " + error.message));
                },
                async () => {
                    // Handle successful uploads
                    try {
                        const downloadURL = await getDownloadURL(uploadTask.snapshot.ref);
                        resolve(downloadURL);
                    } catch (error) {
                        reject(new Error("Failed to get download URL: " + error.message));
                    }
                }
            );
        });
    };

    const deleteProfileImage = async (userId) => {
        const storageRef = ref(firebase.storage, `mess-finder/users/${userId}/profile.png`); // Adjust extension if
needed

        return new Promise((resolve, reject) => {
            deleteObject(storageRef)
                .then(() => {
                    resolve("Profile image deleted successfully.");
                })
                .catch((error) => {
                    reject(new Error("Delete failed: " + error.message));
                });
        });
    };

    return {
        uploadProfileImage,
        deleteProfileImage,
    };
};
```

```
const roomStorage = () => {
    const firebase = useFirebase();

    const uploadRoomImages = async (roomId, files, onProgress) => {
        if (!files || files.length === 0) throw new Error("No files provided.");
        if (files.length > 7) throw new Error("Maximum 7 images allowed.");

        const uploadPromises = files.map((file, index) => {
            if (!file.file) {
                // No actual file to upload, use preview URL
                if (onProgress) onProgress(index, 100); // Simulate full progress
                return Promise.resolve(file.preview);
            }

            const filePath = `mess-finder/rooms/${roomId}/image_${index}.jpg`;
            const storageRef = ref(firebase.storage, filePath);
            const uploadTask = uploadBytesResumable(storageRef, file.file);

            return new Promise((resolve, reject) => {
                uploadTask.on(
                    "state_changed",
                    (snapshot) => {
                        const progress = (snapshot.bytesTransferred / snapshot.totalBytes) * 100;
                        if (onProgress) onProgress(index, progress);
                    },
                    (error) => reject(new Error(`Upload failed: ${error.message}`)),
                    async () => {
                        try {
                            const downloadURL = await getDownloadURL(uploadTask.snapshot.ref);
                            resolve(downloadURL);
                        } catch (error) {
                            reject(new Error(`Failed to get URL: ${error.message}`));
                        }
                    }
                );
            });
        });

        return Promise.all(uploadPromises);
    };


    const deleteRoomImages = async (roomId) => {
        const roomFolderRef = ref(firebase.storage, `mess-finder/rooms/${roomId}`);

        try {
            const allItems = await listAll(roomFolderRef);
            const deletePromises = allItems.items.map(itemRef => deleteObject(itemRef));
            await Promise.all(deletePromises);
        } catch (error) {
            throw new Error(`Failed to delete images: ${error.message}`);
        }
    };

    return {
        uploadRoomImages,
        deleteRoomImages,
    };
};

export {
    userStorage,
    roomStorage,
};
```

/src/context/useGoogleAuth.jsx

The **useGoogleAuth.jsx**, Custom React hook for signing in users using Google authentication via Firebase. It manages authentication state, handles user onboarding or redirection based on role, and stores user information in Firebase Realtime Database if not already present.

```
import { useState } from "react";
import { GoogleAuthProvider, signInWithPopup } from "firebase/auth";
import { useFirebase } from "./firebase";
import { userRTB } from "./firebase-rtb";
import { useNavigate, useLocation } from "react-router-dom";

const useGoogleAuth = () => {
    const firebase = useFirebase();
    const navigate = useNavigate();
    const location = useLocation();
    const [authLoading, setAuthLoading] = useState(false);
    const [authError, setAuthError] = useState("");

    const handleGoogleSignIn = async (selectedRole) => {
        setAuthLoading(true);
        setAuthError(""); // Clear previous errors

        if (!selectedRole) {
            setAuthError("A role must be selected before signing in with Google.");
            setAuthLoading(false);
            return;
        }

        const provider = new GoogleAuthProvider();
        try {
            const result = await signInWithPopup(firebase.auth, provider);
            const user = result.user;

            if (user) {
                const { getData, saveData } = userRTB(firebase);

                // Check if user data already exists in Realtime Database
                const existingUserData = await getData(user.uid);

                if (existingUserData && existingUserData.role) {
                    setAuthError("");
                    navigate(`/${existingUserData.role}/profile`, { state: { from: location } });
                } else {
                    const userData = {
                        id: user.uid,
                        displayName: user.displayName || "",
                        username: "", // You might want to prompt for username later
                        email: user.email,
                        phoneNumber: "",
                        photoURL: user.photoURL || "",
                        dob: "",
                        role: selectedRole, // Use the role passed to the hook
                        about: "",
                    };
                    await saveData(userData.id, { ...userData });
                    setAuthError(""); // Clear any previous error
                    navigate(`/${selectedRole}/profile`, { state: { from: location } });
                }
            } else {
                setAuthError("Google sign-in failed: No user information received.");
            }
        } catch (error) {
            console.error("Google sign-in error:", error);
            if (error.code === "auth/popup-closed-by-user") {
                setAuthError("Google sign-in cancelled by user.");
            } else if (error.code === "auth/cancelled-popup-request") {
                setAuthError("Google sign-in request already in progress.");
            } else {
                setAuthError("Google sign-in failed. Please try again.");
            }
        } finally {
            setAuthLoading(false);
        }
    };

    return { handleGoogleSignIn, authLoading, authError };
};

export default useGoogleAuth;
```

OPEN SOURCE & HOSTING

MessFinder is an open-source web app built with modern frontend technologies and hosted on a reliable cloud platform to ensure performance, availability, and ease of deployment.

Open-Source Codebase

- **Version Control:** Managed with Git, hosted on GitHub for collaboration and transparency.
- **Tech Stack:**
  - *Frontend :* React.js, JavaScript (ES6+), Tailwind CSS
  - *Backend :* Firebase
  - *Routing :* React Router
  - *State Management:* React Hooks, Context API

Deployment & Hosting

- **Platform:** Hosted on Vercel, optimized for React apps.
- **CI/CD:** Auto-deploys on GitHub push.
- **Build:**
  - Command: npm run build
  - Output: build/
- **URL:** mess-finder.vercel.app
- **Security:** HTTPS enabled by default.

FUTURE IMPLEMENTATIONS

MessFinder aims to expand with several impactful enhancements to improve usability, trust, and scalability. Upcoming implementations include:

- Enhanced UI/UX and a faster, smoother experience.
- Stronger security with OTP verification and fraud prevention.
- Map-based search for precise location-based discovery.
- AI-powered suggestions tailored to user behavior and preferences.
- Landlord verification system to ensure authenticity.
- Real-time updates to prevent outdated listings.
- User review/rating system to maintain listing quality.
- Push notifications for updates, messages, and alerts.
- Admin dashboard for analytics, user, and listing management.
- Multilingual support for broader user reach.
- Payment gateway integration for secure online transactions.

No application is ever truly complete. MessFinder will continue to adapt and grow through regular improvements, feedback integration, and technological advancements.

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We are thankful to

Bankura Sammilani College

Kenduadihi ❄ Bankura