SOEN 390 - Compiled Report

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Department of Computer Science & Software Engineering

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Software Product Vision

1. Introduction

The purpose of this document is to collect, analyze, and define high-level needs and features of the Urbankey. It focuses on the capabilities needed by the stakeholders, and the target users, and **why** these needs exist. The details of how the Urbankey fulfills these needs are detailed in the use-case and supplementary specifications.

2. Positioning

2.1 Problem Statement

The problem of	inefficient procedures for managing condominiums
affects	public users, condo owners, rental users, condo management companies
the impact of which is	issues of integration, accessibility and complexity for the users, as well as the lack of essential features.
a successful solution would be	better communication between the users and condo owners, simplified financial and reservation system which will ultimately lead to an increased satisfaction among all stakeholders.

2.2 Product Position Statement

For	condo management companies and tenants
Who	need a simple and efficient condominium management system
The Urbankey	is a Condominium Management System
That	enables effective property management, simplified financial tracking, simplified reservations system
Unlike	current alternatives which are missing user-centric features and design
Our product	guarantees a user-friendly experience, catering to the particular requirements of condo owners, tenants, and management companies.

3. Stakeholder and User Descriptions

3.1 Stakeholder Summary

Name	Description	Responsibilities
Architects and Engineers	Professionals involved in the design of the property, responsible for developing architectural plans and designs for the condominium.	Design architectural layouts that optimize space utilization and adhere to safety regulations. Ensure that the physical structure of the condominium supports the functionality required by the management system.
Tech companies and programmers	Professionals involved in the creation and maintenance of the software of the system, responsible for software development, database management, updates, and maintenance.	• Software development • Database management • Updates and maintenance • Frontend interfaces, and integrations with third-party services

Financial institutions	Institutions or banks providing loans or financial services, responsible for assessing risks related to lending and investments and conducting credit evaluations.	● Assess risks related to lending and investments ● Credit evaluation
Legal advisors	Professionals ensuring any operations regarding the condos complies with the law, and handle any legal issues related to privacy and data protection.	● Privacy and Data Protection

3.2 User Summary

Name	**Description**	**Responsibilities**	**Stakeholder**
Condo owners	Individuals who own condominium units - responsible for managing unit details, submitting requests (moving in/out, violation reports, etc.), accessing/updating their property dashboards, reserving common facilities, and engaging in financial transactions.	● manages unit details ● submit requests (moving in/out, violation reports, etc.) ● access/update their property dashboards ● reserve common facilities ● engaging in financial transactions	Condo management companies
Tenants	Individuals occupying condominium units through rental agreements, responsible for occupying and maintaining the rented units and engaging in some financial transactions related to rental payments.	● occupies and maintains the rented units ● may engage in some financial transactions related to rental payments	Condo management companies
Condo management companies	Companies responsible for managing condominium properties, responsible for creating and managing property profiles, uploading condo files, managing financial aspects, setting up reservation systems for common facilities, assigning roles to employees, and handling requests from condo owners/tenants.	● Create and manage property profiles ● Upload condo files ● Manage financial aspects ● Set up reservation system for common facilities ● Assign roles to employees ● Handle requests from condo owners/tenants	N/A
Managers	Individual responsible for overseeing daily operations of condominium properties, supervising property management tasks, ensuring smooth functioning of common facilities, managing employee roles and responsibilities, and addressing escalated issues from condo owners/tenants.	● Supervises property management tasks ● Ensures smooth functioning of common facilities ● Manages employee roles and responsibilities ● Addresses escalated issues from condo owners/tenants	Condo management companies

Operations Managers	Individuals responsible for the day-to-day operations of condominium properties, coordinating maintenance and repairs, ensuring compliance with regulations and standards, overseeing staff scheduling and training, and resolving operational issues and emergencies.	● Coordinates maintenance and repairs ● Ensures compliance with regulations and standards ● Oversees staff scheduling and training ● Resolves operational issues and emergencies	Condo management companies
Finance Officers	Individuals responsible for financial aspects of condominiums management, managing condo fees and operational budgets, tracking financial transactions and expenses, generating financial reports, and ensuring financial compliance and accuracy.	● Manages condo fees and operational budget ● Tracks financial transactions and expenses ● Generates financial reports ● Ensures financial compliance and accuracy	Condo management companies

3.3 User Environment

- The number of people involved might vary, from condo owners or tenants taking care of their apartments to staff members of condo management companies handling several buildings. Depending on the participation of users or the property offers, the user base may grow or shrink.
- Task cycles change based on the type of activity of different users. For example, a condo owner can dedicate more time to financial transactions or managing reservations
- Users access the condo management system through devices such as laptops and smartphones, creating a mostly digital environment.
- Currently, the condo management system is accessible via web browsers. In the future, there are plans to develop dedicated Android and iOS applications, expanding the platform compatibility to include mobile devices.
- Users can use multiple applications, including messaging and communication platforms like email, and financial apps for transactions.

3.4 Key Stakeholder or User Needs

Need	Priority	Concerns	Current Solution	Proposed Solution
Better Communication	High	Slow responses and not clear	Emails, phone calls, in-person meeting	One place/page for all messages and notifications
Clearer Finances	High	Confusing fees and hard to understand	Using spreadsheets and done manually	Easy-to-read financial info and clear breakdowns
Easy Booking	High	Difficulty booking and prone to errors	Online booking with real-time updates	Simplified booking process with intuitive interface and personalized recommendations

Quicker Resolution	High	Delays in resolving issues and lack of visibility	Sending emails and making phone calls	Tracking status of requests and receiving updates in real-time
Broadcast Messages	Medium	Messages not reaching everyone and lack of central news hub	Notices and physical notes	Centralized platforms for important announcements and updates
User-friendly interface	High	Difficulty in navigating the system	Complex menus and unintuitive layout	Design an intuitive and responsive interface with clear navigation paths and consistent design elements
Data security	High	Concerns about privacy and data protection	Lack of encryption or data breaches	Implement robust data encryption protocols and regular security audits to ensure user data protection
Mobile accessibility	High	Limited access to features on mobile devices	Limited mobile app functionality or lack of compatibility across devices	Develop a responsive mobile application with feature parity and seamless user experience across different devices
Timely notifications	Medium	Missed updates or important events	Manual checking of emails or notifications	Enable push notifications and customizable alert settings to ensure timely updates and reminders
Streamlined workflows	Medium	Inefficient or redundant processes	Manual data entry and disjointed workflows	Automate repetitive tasks and streamline processes to improve efficiency and productivity

***Table 1*: Key Stakeholders' and User's Needs**

Description	Centralized messaging system
Type	System enhancement
Responsibilities	Develop system for sending/receiving messages and notification
Success Criteria	Easily accessible messages for stakeholders
Involvement	Product manager, development team
Deliverables Comments/Issues	Ensure compatibility across various devices. Address scalability concerns to accommodate potential increases in user base and message volume.

***Table 2*: Better Communication**

Description	User-friendly financial module
Type	System Enhancement
Responsibilities	Design financial module with clear fee breakdowns
Success Criteria	Understandable financial information
Involvement	Product manager, financial analyst and development team
Deliverables Comments/Issues	Ensure scalability for future updates and additions. Implement features for exporting financial data in multiple formats to facilitate analysis and auditing processes.

***Table 3*: Clearer Financial Information**

Description	Intuitive booking system
Type	New feature
Responsibilities	Develop user-friendly booking system with personnalized recommendations
Success Criteria	Simplified, error-free booking process

Description	Real-time request tracking
Type	System enhancement
Responsibilities	Implement system for real-time tracking and updates on requests
Success Criteria	Easy request tracking and timely updates

Involvement	Product manager, UX/UI designer
Deliverables Comments/Issues	Ensure integration with existing reservation system. Address compatibility issues with different request types to provide a seamless booking experience for users.

Table 4: Easy Booking

Involvement	Product manager and development team
Deliverables Comments/Issues	Implement features for tracking the status of requests and providing real-time updates to users. Ensure compatibility with various communication channels (email, SMS, etc.) to reach users effectively.

Table 5: Quicker Resolution

Description	Centralizes messaging platform
Type	New feature
Responsibilities	Develop platform for broadcasting announcements to all users
Success Criteria	Effective communication of announcements
Involvement	Product Manger, Communication specialist and development team
Deliverables Comments/Issues	Ensure scalability for large user base. Implement features for scheduling and targeting broadcast messages to specific user groups or individuals.

Table 6: Broadcast Message

Description	Design an intuitive and responsive interface with clear navigation paths and consistent design elements
Type	UI/UX Design
Responsibilities	Designing user interface elements, navigation flows, and visual design
Success Criteria	User satisfaction with interface usability and navigation
Involvement	UI/UX Designers, Developers
Deliverables Comments/Issues	Ensure compliance with accessibility standards. Address performance issues related to interface responsiveness and loading times to enhance user experience.

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Description	Implement robust data encryption protocols and regular security audits to ensure user data protection
Type	Security
Responsibilities	Implementing encryption algorithms, securing databases, and conducting security audits
Success Criteria	Absence of data breaches and compliance with privacy regulations
Involvement	Security Experts, Developers
Deliverables Comments/Issues	Ensure adherence to industry security standards. Implement features for regular security audits and vulnerability assessments to identify and mitigate potential security risks.

Table 8: Data Security

Description	Develop a responsive mobile application with feature parity and seamless user experience across different devices
Type	Development
Responsibilities	Developing mobile application features and ensuring cross-device compatibility
Success Criteria	User engagement and satisfaction with mobile app functionality
Involvement	Developers, UI/UX Designers
Deliverables Comments/Issues	Ensure optimization for various screen sizes and resolutions. Address compatibility issues with different mobile platforms (Android, iOS, etc.) to reach a wider audience of mobile users.

Table 9: Mobile accessibility

Description	Enable push notifications and customizable alert settings to ensure timely updates and reminders
Type	Notification
Responsibilities	Implementing push notification functionality and user preference settings
Success Criteria	Users receiving timely notifications and reminders
Involvement	Developers, Product Managers
Deliverables Comments/Issues	Ensure compatibility across different notification channels. Implement user training and adoption strategies to encourage users to enable and customize notification settings.

***Table 10*: Timely notifications**

Description	Automate repetitive tasks and streamline processes to improve efficiency and productivity
Type	Workflow Improvement
Responsibilities	Analyzing existing processes, identifying automation opportunities, and implementing workflow improvements
Success Criteria	Increased efficiency and productivity, reduced manual intervention
Involvement	Business Analysts, Developers
Deliverables Comments/Issues	Address usability issues related to workflow automation features to ensure intuitive user interaction. Implement features for monitoring and analyzing workflow efficiency to identify areas for further optimization.

***Table 11*:Streamlined workflows**

3.5 Alternatives and Competition

An alternative for the stakeholders would be to build their own management system. They could also buy an existing condo management system, add additional features and maintain it.

Alternatives:

- Build their own management system
- Buy an existing one, implement additional features and maintain it

These alternatives would allow the stakeholders to have full control on the system.

Competition:

- Existing condo management systems
- Real estate firms

Some companies that offer competition in the condo management systems market:

Buildium: Buildium offers a comprehensive property management solution designed for property managers, landlords, and homeowner associations. It includes features such as accounting, lease tracking, maintenance requests, and online payments.

AppFolio Property Manager: AppFolio is a cloud-based property management software that caters to residential, commercial, student housing, and community association property managers. It provides features like online rent payments, maintenance requests, and vacancy advertising.

Condo Control Central: Condo Control Central provides web-based property management software designed specifically for condominiums and HOAs. It offers features such as visitor management, amenity booking, maintenance tracking, and document management.

TOPS Software: TOPS Software offers a suite of community management solutions, including software for condominiums, homeowner associations, and co-ops. Their products include features like accounting, communication tools, architectural request management, and community websites.

Yardi Voyager: Yardi Voyager is a property management platform that serves various real estate sectors, including residential, commercial, and condominium management. It offers modules for accounting, leasing, maintenance, and reporting tailored to the specific needs of each property type.

To distinguish itself as a top condo management software from competitors such as Buildium, AppFolio Property Manager, Condo Control Central, TOPS Software, and Yardi Voyager, UrbanKey will focus on a smooth user experience with an intuitive UI and configurable functionality. UrbanKey would excel in financial management by providing full tools for fee tracking, budgeting, and transparent reporting. Mobile accessibility and strong data security safeguards would enable easy access and user data safety. UrbanKey will also innovate by offering unique features such as enhanced amenities booking and smart home integration, as well as superior customer service, to create user happiness and loyalty.

4. Product Overview

This section presents both product perspective and assumptions and dependencies of the Urbankey.

4.1 Product Perspective

The purpose of the condo management app and website is to simplify condo management procedures by activating as separate, self-contained platforms. The application enables users to interact with it, while the website provides further features that can be accessed by web browsers. User profiles, finance systems, property management tools, reservation capabilities, and request submission features are important parts. These platforms work together flawlessly to give management firms, condo owners, and renters all the resources they need to manage properties effectively. Widespread accessibility is ensured via external interfaces' interaction with several operating systems.

4.2 Assumptions and Dependencies

The availability of registration keys from management organizations, correct property data input, and the smooth operation of the finance and reservation systems are some of the assumptions and dependencies for the condo management system. Any modifications to these elements may have an impact on the characteristics listed in the Vision report. Furthermore, assumptions on the app's compatibility with multiple platforms, language options, and login methods like Gmail or Single Sign-On are critical, since changes may need adjustments to the Vision document.

5. Product Features

5.1 User Profile

Public users can create their own unique profile. This profile should include a profile picture, user name, contact email, phone number. Moreover, public users are required to provide a registration key obtained by their condo

management company to become a condo owner. To become rental users in the system, public users must input a registration key obtained from their condominium management company.

5.2 Condo Owner Dashboard

Condo owner can view features of their properties such as general information, personal profile, condo information, financial status, status of the submitted request, etc in a dashboard

5.3 Condo Management Companies Profile

The property profile in the system requires a property name, unit count, parking count, locker count, and address. Condo management companies can upload files for each property, and those files are accessible to all condo owners. They can include detailed information about condo units, parking spots, and lockers, encompassing unit size, owner details, occupant information, and associated condo fees. Furthermore, management companies can send registration keys to unit owners or rental users, allowing them to link their profiles with specific condo units.

5.4 Financial System

Management companies input condo fees per square foot and parking spot. Condo fees for each unit are calculated and presented to owners, recorded in the financial system, along with operational budgets and costs. An annual report can be generated, summarizing condo fee collections for the year. The system also includes a reservation feature for common facilities, like a sky lounge or spa fitness. Condo owners and rental users can use a calendar-like interface to reserve facilities, with real-time availability display. Reservations operate on a first-come-first-serve basis, rendering a facility unavailable once booked.

5.6 Reservation System

The condominium management system features a simple reservation system where condo management companies establish reservations for common facilities such as a sky lounge and a spa fitness center. This system is presented in a calendar-like interface, and allows both condo owners and renters to reserve these common facilities. Availability for these facilities is displayed, and reservations are processed on a first-come-first-serve basis. Once a facility is booked, it becomes temporarily unavailable for the reserved duration.

5.7 Reservation System

Condo management firms have the ability to assign distinct roles to various employees overseeing the same property. These roles may include a manager, responsible for day-to-day operations, and an employee handling financial responsibilities.

5.8 Requests

Condo owners can submit various requests, such as move-in/out dates for reserving elevators, intercom changes, access requests for fobs or keys, reporting violations, highlighting deficiencies in common areas, or seeking information. Each request is directed to the appropriate employee based on its type.

5.9 Notifications

Every user has a notifications page where they can view the most recent activities related to their submitted or assigned requests.

6. Other Product Requirements

Standards, Hardware, or Platform Requirements

The software product must adhere to industry-standard security protools to ensure the protection of user data. Additionally, it should be compatible with widely used operating systems including Android, iOS, Linux, MacOS, or Windows.

Performance Requirements

Response time for critical user interactions, such as profile creation and reservation submissions, should be within 2 seconds to ensure a seamless experience. And system uptime must be maintained at 99.9% to minimize service disruptions, with downtime limited to scheduled maintenance windows.

Environmental Requirements

The system should be built with optimal resource use to save CPU and battery consumption, and it should work well on both desktop and mobile devices. It is important to take into account how much bandwidth is used, particularly for customers who have spotty internet access, and strive for data transfer speeds that are suited for 3G and 4G networks.

Quality Ranges

- ***Performance:*** average response time, peak response time, and throughput are important variables to consider when optimizing response times for effective user interactions.
- ***Robustness:*** metrics like error rates, crash frequencies, and mean time to failure (MTTF) should be used to gauge how well the system withstands unforeseen mistakes and handles heavy traffic loads.
- ***Fault tolerance:*** recovery time objective (RTO) and recovery point objective (RPO) metrics, together with error recovery and data backup mechanisms, should be in place to guarantee system dependability. The RTO provides the maximum permissible delay for system restoration following an incident, while RPO establishes the maximum allowable data loss in the case of a failure or interruption.
- ***Usability:*** tested by usability experts and user satisfaction questionnaires, the interface should be simple to use, easy to navigate, and provide insightful feedback.

Design Constraints and Dependencies

Compatibility testing may be necessary to ensure smooth data interchange, and integration with current databases and condo management software may be necessary. Adherence to legal and regulatory obligations for privacy and data processing, with frequent audits carried out to confirm compliance with standards.

Documentation Requirements

To guarantee widespread adoption, thorough user manuals and online help resources covering subjects like account creation, feature usage, and troubleshooting techniques should be made available. Accessibility metrics

for the material should also be monitored. In order to maintain uniformity acros platforms, labeling and packaging regulations may incorporate branding rules.

Priority and Attributes

- ***Stability:*** maintaining user trust and satisfaction requires a sturdy and reliable system.
- ***Benefit:*** with key performance indicators set up to track the effects of features on user happiness and productivity, the system's features should offer users observable advantages like increased efficiency and communication
- ***Effort:*** ensure that the project deadlines are fulfilled, development efforts should be concentrated on integrating key features and guaranteeing peak performance. Metrics for allocating resources, such as development hours and job completion rates, should be tracked.
- ***Risk:*** risk assessment matrices are used to prioritize risk in order to mitigate the risks associates with data security breaches and system failures, which are crucial for safeguarding user information and preserving business continuity.
- ***Communication***: Establishing clear and effective communication channels between stakeholders, development teams, and end-users is essential for ensuring alignment of goals and expectations throughout the project lifecycle. Regular status updates, meetings, and feedback sessions should be conducted to facilitate transparent communication and foster collaboration. Additionally, providing user-friendly interfaces for communication within the system can enhance user engagement and satisfaction.

User Stories Backlog

User Story #1
As a public user, I want to personalize my profile with a picture, username, and contact details for community engagement.

Issue #43

User Story #2
As a public user, I want to use a registration key from the management company to securely become a condo owner in the system.

Issue #44

User Story #3
As a public user, I want to use a registration key from the management company to securely become a rental user in the system.

Issue #45

User Story #4
As a condo owner, I want a comprehensive dashboard displaying property and financial details, allowing efficient property management.

Issue #18

Issue #46

User Story #5
As a property manager, I want to create a property profile with essential details (property name, unit count, parking count, locker count, address) for accurate property management.

Issue #17

Issue #30

Issue #47

User Story #6
As a property manager, I want to upload condo files for each property so that all condo owners can access important information, enhancing transparency and communication.

Issue #48

User Story #7
As a property manager, I want to enter detailed information for each condo unit, parking spot, and locker, including unit ID, size, owner details, occupant information, and condo fees, ensuring a comprehensive and accurate property database.

Issue #49

User Story #8
As a property manager, I want to be able to generate and send registration keys to unit owners and rental users, so that they can link a condo unit to their profile.

Issue #50

User Story #9
As a property manager, I want to enter condo fee per square foot and per parking spot, so that I can accurately calculate the fee for each condo unit.

Issue #51

User Story #10
As a property manager, I want to calculate and present the fee for each unit, so that I can present it to the unit owner.

Issue #52

User Story #11
As a financial system agent, I want the system to record both the operational budget and the associated costs for each operation, so that we can maintain transparent financial management.

Issue #53

User Story #12
As a financial system agent, I want to generate an annual report summarizing all the fees collected for a given year.

Issue #54

User Story #13
As a property manager, I want to set up a system for managing reservations of common facilities, to allow residents to schedule and access these amenities.

Issue #55

User Story #14
As a condo owner/rental user, I want to be able to reserve common facilities within the complex through a calendar-like interface, to efficiently plan my activities.

Issue #56

User Story #15
As a condo owner/rental user, I want to know the availability of common facilities, so that I can easily plan and book the shared amenities for my personal or guest use.

Issue #57

User Story #16
As a property manager, I want the reservation system to operate on a first-come-first-serve basis so that once a facility is booked, it becomes unavailable for the reserved time and ensures fair access to common amenities.

Issue #58

User Story #17
As a property manager, I want to be able to set up different roles (e.g., manager, finance) for employees who are responsible for the same property so that the efficiency of assigning and managing tasks within the team becomes more organized.

Issue #59

User Story #18
As a condo owner, I want to submit requests for tasks like moving, intercom changes, access items, violation reports, common area issues, and questions so that addressing needs becomes easy and convenient.

Issue #60

User Story #19
As a property manager, I want each request to be assigned to the appropriate employee based on the type of request so that the resolution process for residents remains smooth and efficient.

Issue #61

User Story #20
As a public user, I want to have a notification page where I can view the latest activities related to my submitted or assigned requests so that I can stay informed on the progress and updates of the condo.

Issue #63

User Story #21
As a user, I want to be able to navigate the website efficiently so that I can access the information I need quickly.

Issue #62

User Story 1

001	Public User Profile Creation		
As a public user **I want** to personalize my profile with a picture, username, and contact details **Because** I am looking for community engagement			
User Profile Feature			
Must	Bus. Value: M	Risk: M	Effort: 5

Status
Front-end: Completed
Backend: Completed

User Story 2

002	Becoming a Condo Owner		
As a public user **I want** to use a registration key from the management company **To** securely become a condo owner in the system			
Registration Key Feature			
Must	Bus. Value: H	Risk: M	Effort: 6

Status
Front-end: Completed
Backend: Completed

User Story 3

003	Becoming a Rental User		
As a public user **I want** to use a registration key from the management company **To** securely become a rental user in the system.			
Registration Key Feature			
Must	Bus. Value: H	Risk: M	Effort: 6

Status
Front-end: Completed
Backend: Completed

User Story 4

004	Condo Owner Profile		
As a condo owner **I want** a comprehensive dashboard displaying property and financial details **Because** it allows for efficient property management.			
Condo Owner Dashboard Feature			
Must	Bus. Value: H	Risk: M	Effort: 8

Status
Front-end: Completed
Backend: Completed

User Story 5

005	Property Profile Creation		
As a property manager **I want** to create a property profile with essential details (property name, unit count, parking count, locker count, address) **For** accurate property management			
Condo Management Company Feature			
Must	Bus. Value: H	Risk: M	Effort: 8

Status
Front-end: Completed
Backend: Completed

User Story 6

006	File Upload for Condo Management Companies		
As a property manager **I want** to upload condo files for each property so that all condo owners can access important information **Because** I would like to enhance transparency and communication			
File Upload Feature			
Could	Bus. Value: M	Risk: M	Effort: 5

Status
Front-end: Completed
Backend: Completed

User Story 7

007	Condo Management Company Information		
As a property manager **I want** to enter detailed information for each condo unit, parking spot, and locker, including unit ID, size, owner details, occupant information, and condo fees **To** ensure a comprehensive and accurate property database			
Condo Management Company Feature			
Must	Bus. Value: H	Risk: M	Effort: 8

Status
Front-end: Completed
Backend: Completed

User Story 8

008	Generate and send registration code		
As a property manager **I want to** be able to generate and send registration keys to unit owners and rental users **To** link a condo unit to the user's profile.			
Registration Key Feature			
Must	Bus. Value: M	Risk: H	Effort: 5

Status
Front-end: Completed
Backend: Completed

User Story 9

009	Enter condo unit fee		
As a property manager **I want to** enter condo fees per square foot and per parking spot **To** accurately calculate the fee for each condo unit.			
Condo Fee Calculation Feature			
Must	Bus. Value: M	Risk: H	Effort: 3

Status
Front-end: Completed
Backend: Completed

User Story 10

010	Calculate condo unit fee		
As a property manager **I want to** calculate and present the fee for each unit, **To** present it to the unit owner.			
Condo Fee Calculation Feature			
Must	Bus. Value: M	Risk: M	Effort: 8

Status
Front-end: Completed
Backend: Completed

User Story 11

011	Record operational budget		
As a financial system agent **I want** the system to record both the operational budget and the associated costs for each operation **To** maintain transparent financial management.			
Operational Budget Feature			
Should	Bus. Value: M	Risk: H	Effort: 5

Status
Front-end: Completed
Backend: Completed

User Story 12

012	Generate annual report		
As a financial system agent **I want to** generate an annual report summarizing all the fees collected for a given year **To** organize the finances for each year.			
Annual Report Feature			
Should	Bus. Value: M	Risk: H	Effort: 13

Status
Front-end: Completed
Backend: Completed

User Story 13

013	Set up facility reservation system		
As a property manager **I want to** set up a system for managing reservations of common facilities **To** allow residents to schedule and access these amenities.			
Facility Reservation Feature			
Must	Bus. Value: M	Risk: M	Effort: 8

Status
Front-end: Completed
Backend: Completed

User Story 14

014	Reserve common facilities		
As a condo owner/rental user **I want to** be able to reserve common facilities within the complex through a calendar-like interface **To** efficiently plan my activities.			
Facility Reservation Feature			
Must	Bus. Value: M	Risk: M	Effort: 5

Status
Front-end: Completed
Backend: Completed

User Story 15

015	Knowing the Common Facilities' Availability		
As a condo owner/rental user **I want** to know the availability of common facilities **So** that I can easily plan and book the shared amenities for my personal or guest use			
Reservation System Feature			
M	Bus. Value: H	Risk: L	Effort: 4

Status
Front-end: Completed
Backend: Completed

User Story 16

016	First-Come-First-Serve System		
As a property manager **I want** the reservation system to operate on a first-come-first-serve basis **So** that once a facility is booked, it becomes unavailable for the reserved time and ensures fair access to common amenities			
Reservation System Feature			
M	Bus. Value: M	Risk: M	Effort: 6

Status
Front-end: Completed
Backend: Completed

User Story 17

017	Setting Up Different Roles		
As a property manager **I want** to set up different roles (e.g., manager, finance) for employees who are responsible for the same property **So** that the efficiency of assigning and managing tasks within the team becomes more organized			
Setting different roles for different employees Feature			
M	Bus. Value: H	Risk: H	Effort: 7

Status
Front-end: Completed
Backend: Completed

User Story 18

018	Submission of Requests		
As a condo owner **I want** to submit requests for tasks like moving, intercom changes, access items, violation reports, common area issues, and questions **So** that addressing needs becomes easy and convenient			
Request Feature			
M	Bus. Value: M	Risk: M	Effort: 6

Status
Front-end: Completed
Backend: Completed

User Story 19

019	Request Assignment		
As a property manager **I want** each request to be assigned to the appropriate employee based on the type of request **So** that the resolution process for residents remains smooth and efficient			
Request Feature			
M	Bus. Value: H	Risk: H	Effort: 8

Status
Front-end: Completed
Backend: In Progress

User Story 20

020	Notification Page		
As a public user **I want** to have a notification page where I can view the latest activities related to my submitted or assigned requests **So** that I can stay informed on the progress and updates of the condo			
Notification Page Feature			
C	Bus. Value: M	Risk: M	Effort: 7

Status
Front-end: Completed
Backend: In Progress

User Story 21

027	Navigation Bars		
As a user **I want** to be able to navigate the website efficiently **Because** I want to quickly access the information I need.			
Navigation Bars Feature			
Should	Bus. Value: H	Risk: M	Effort:8

Status
Front-end: Completed
Backend: Completed

We have removed User Stories #22 to #27 seeing as those are additional and optional features that are not part of the main requirements.

Software Architecture Document

Domain Model

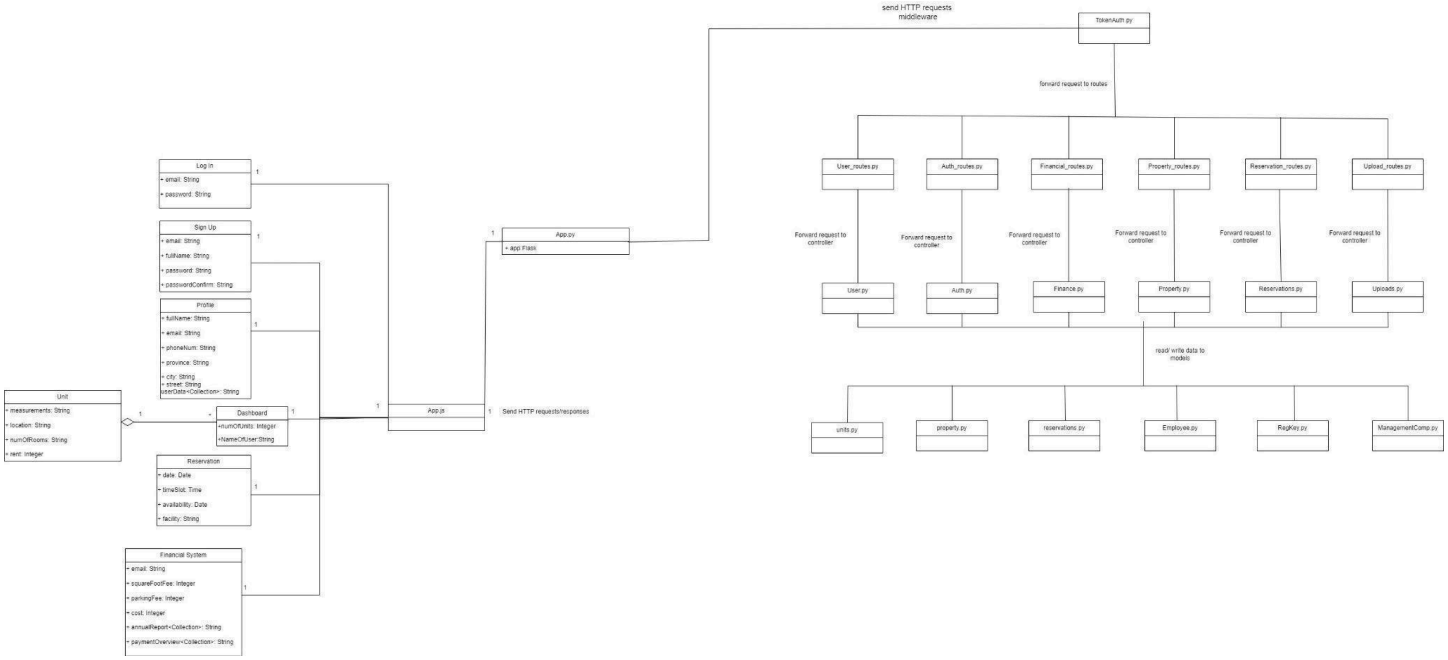


Figure 1: Domain Model

Class Diagram

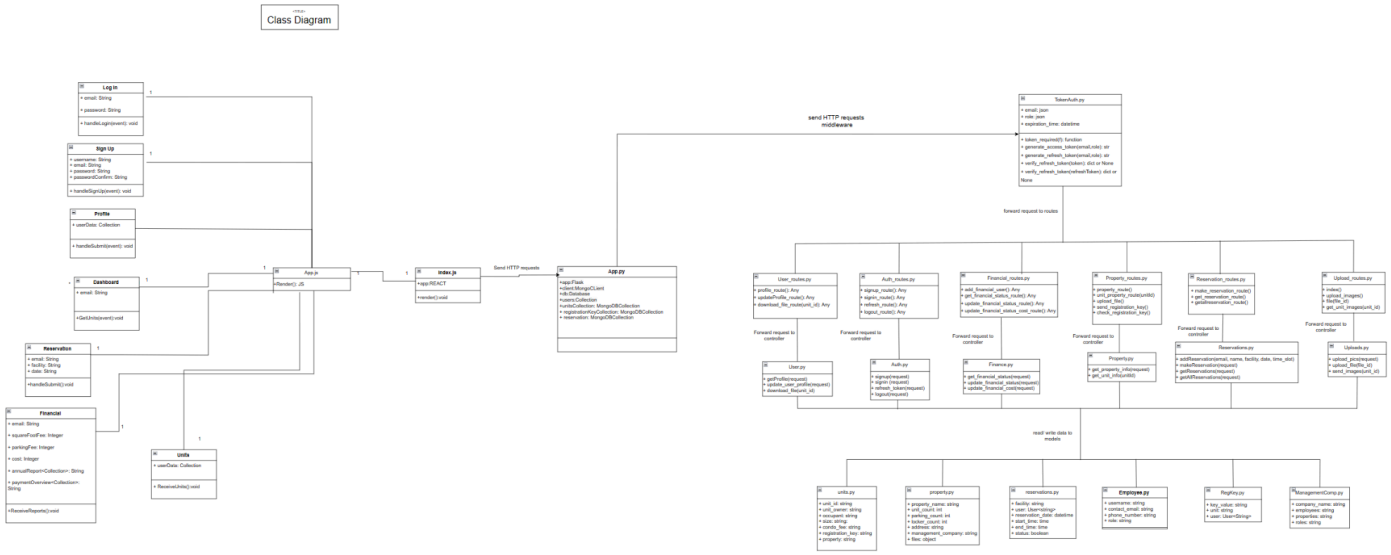


Figure 2: Class Diagram

Component Diagram

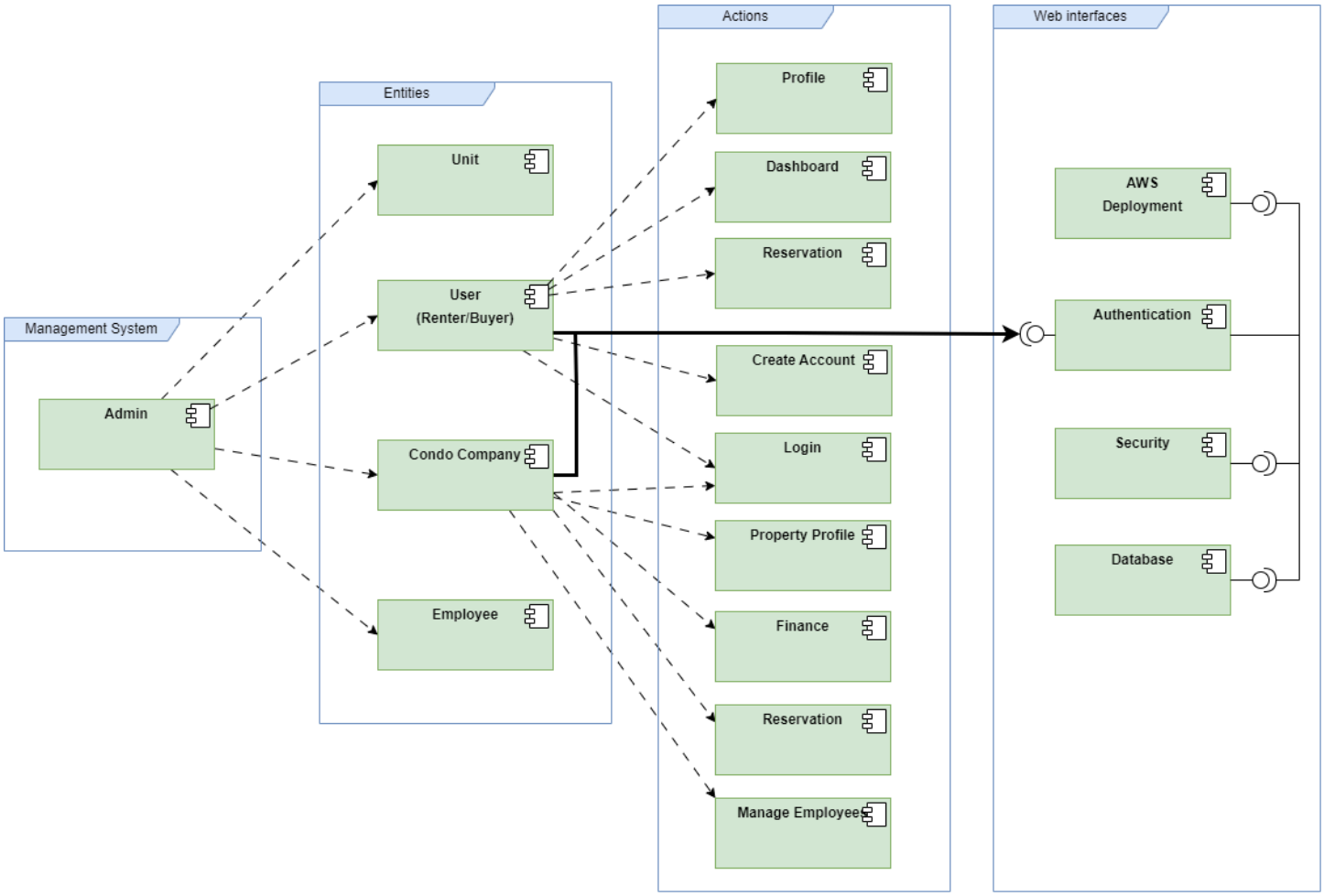


Figure 3: Component Diagram

Deployment Diagram

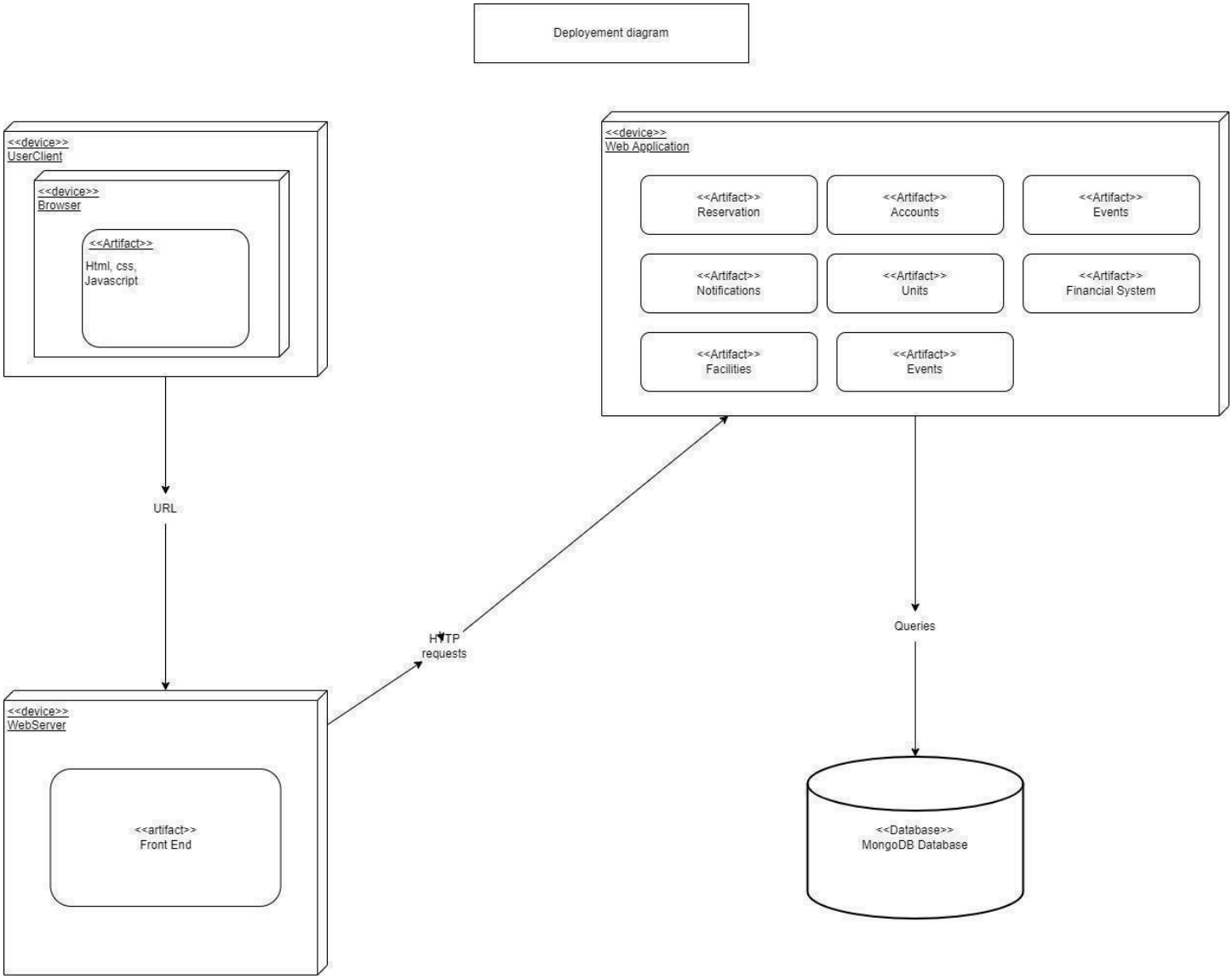
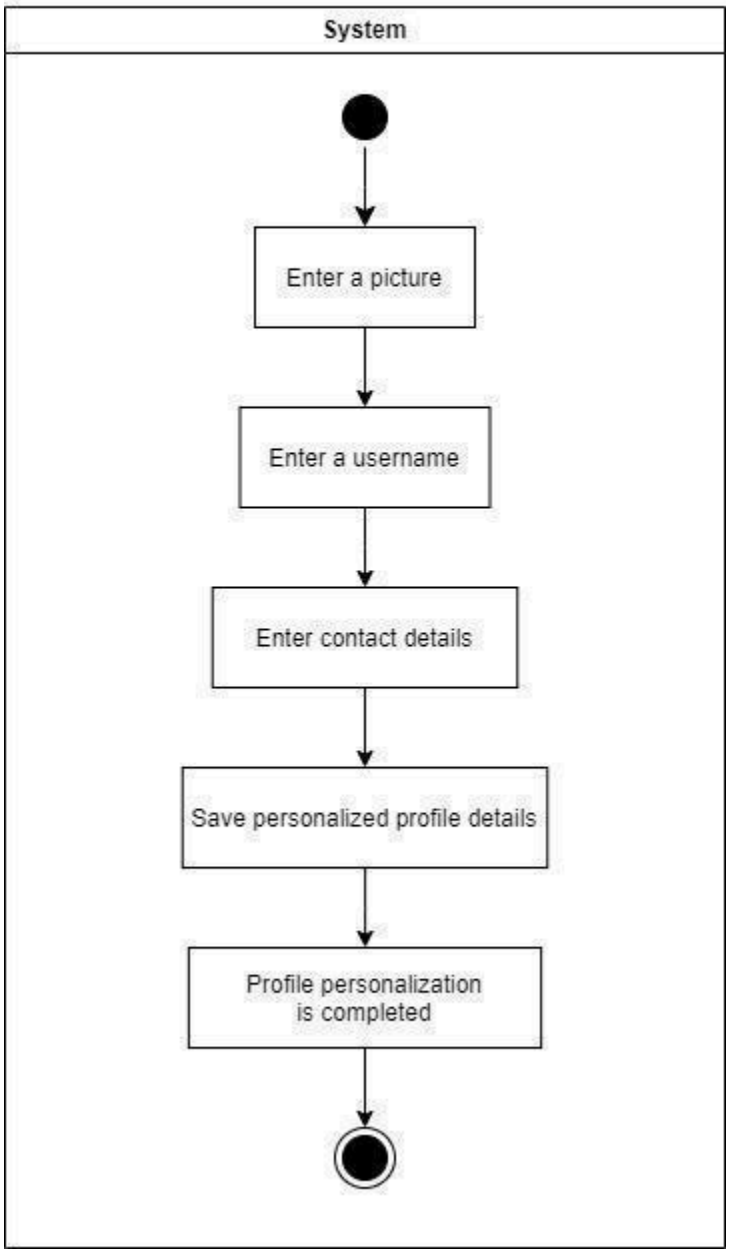


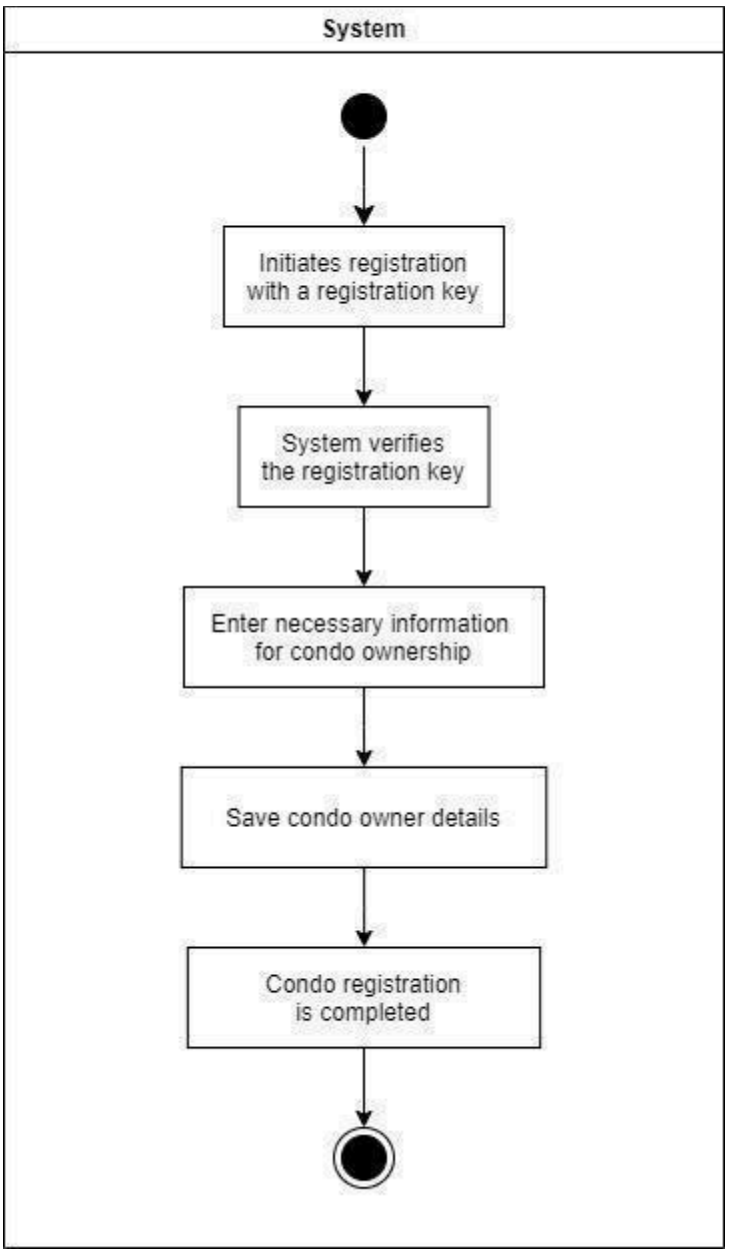
Figure 4: Deployment Diagram

Activity Diagrams

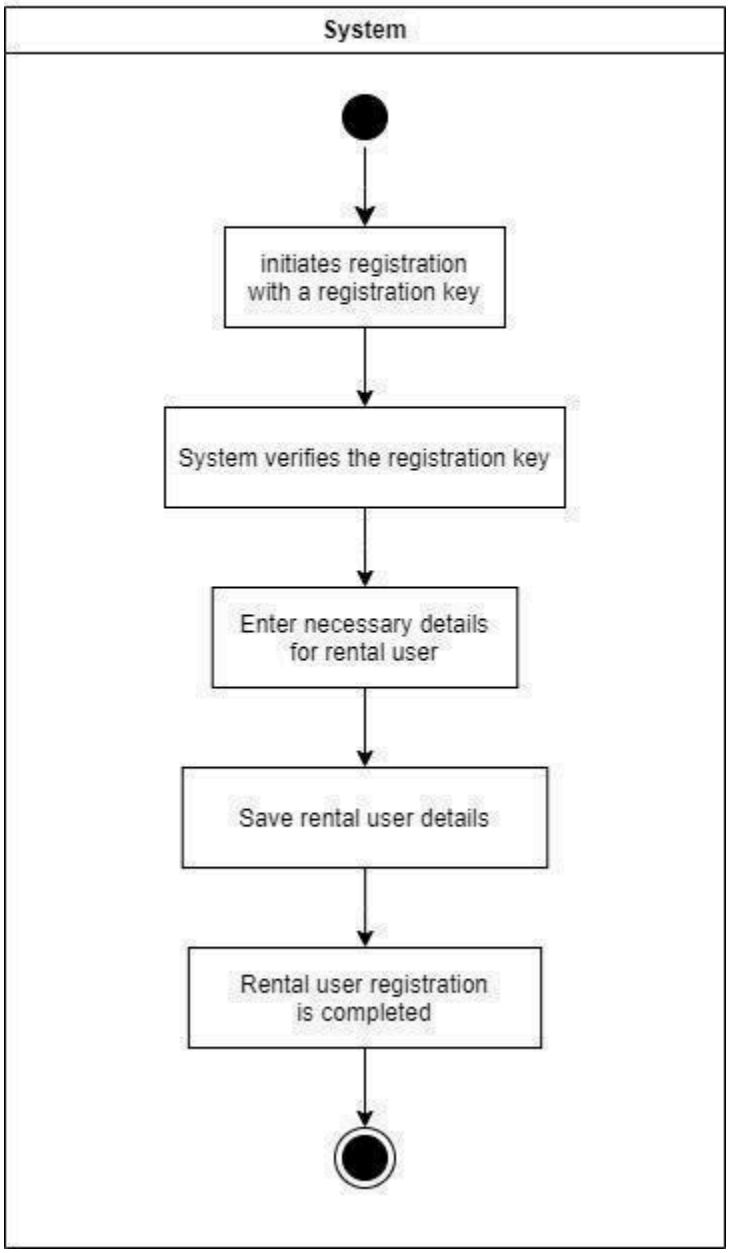
ID: 001



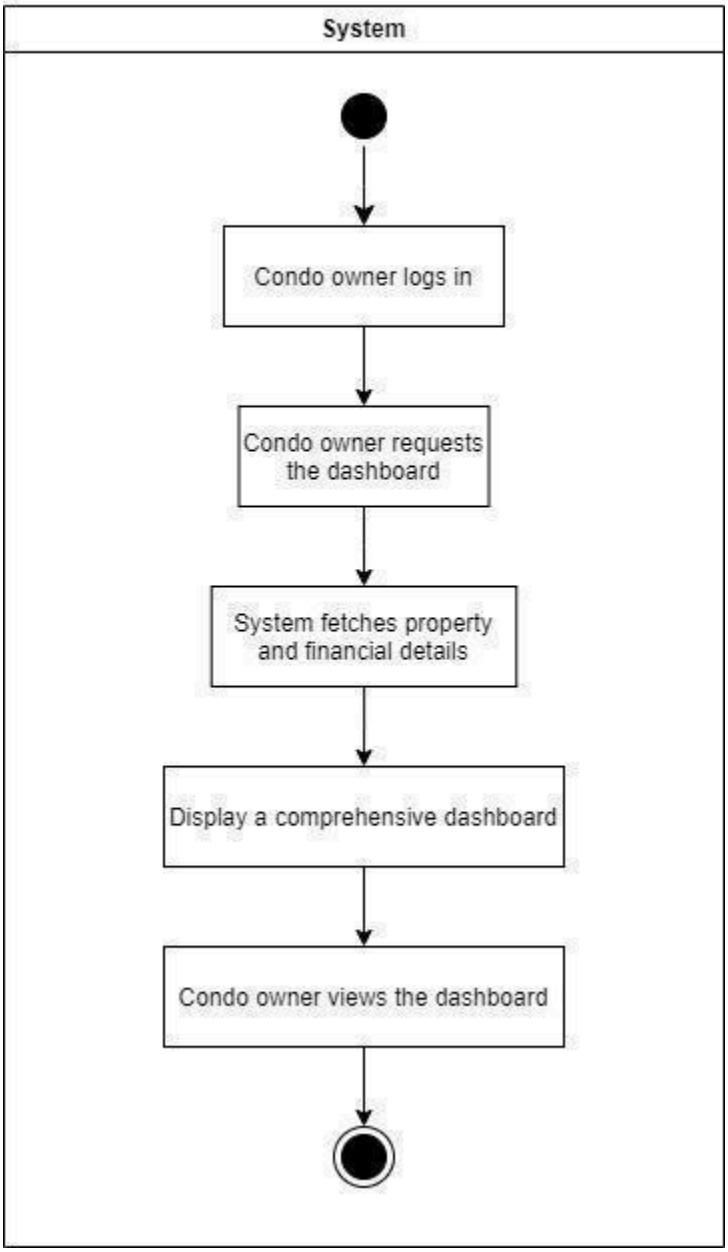
ID: 002



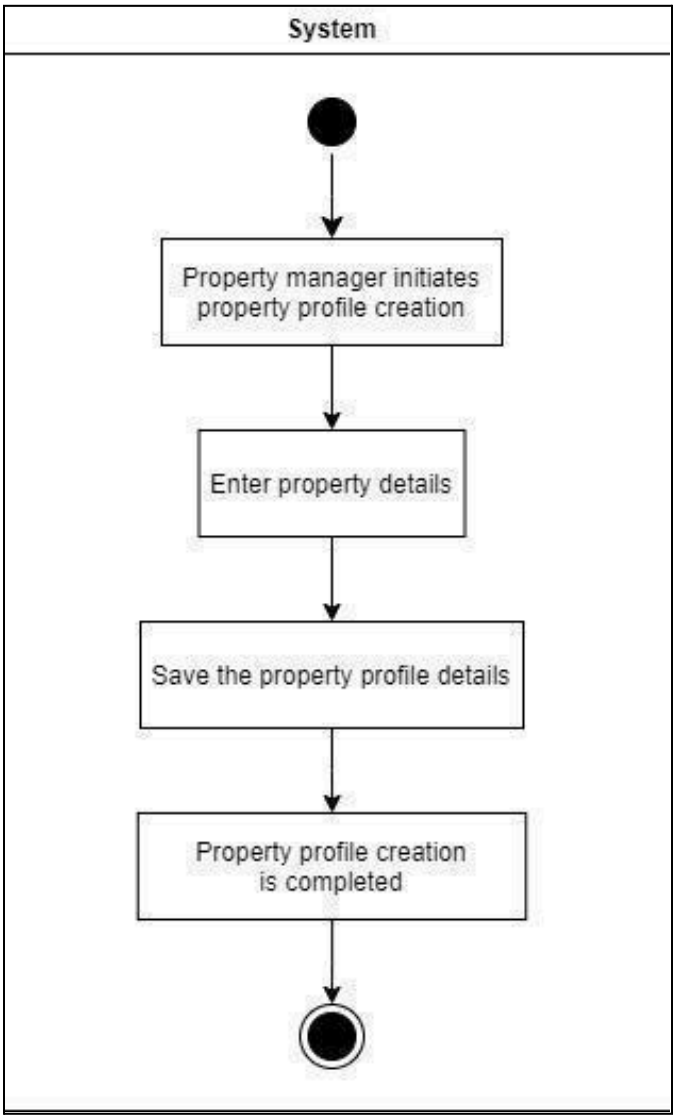
ID: 003


System
initiates registration with a registration key
System verifies the registration key
Enter necessary details for rental user
Save rental user details
Rental user registration is completed

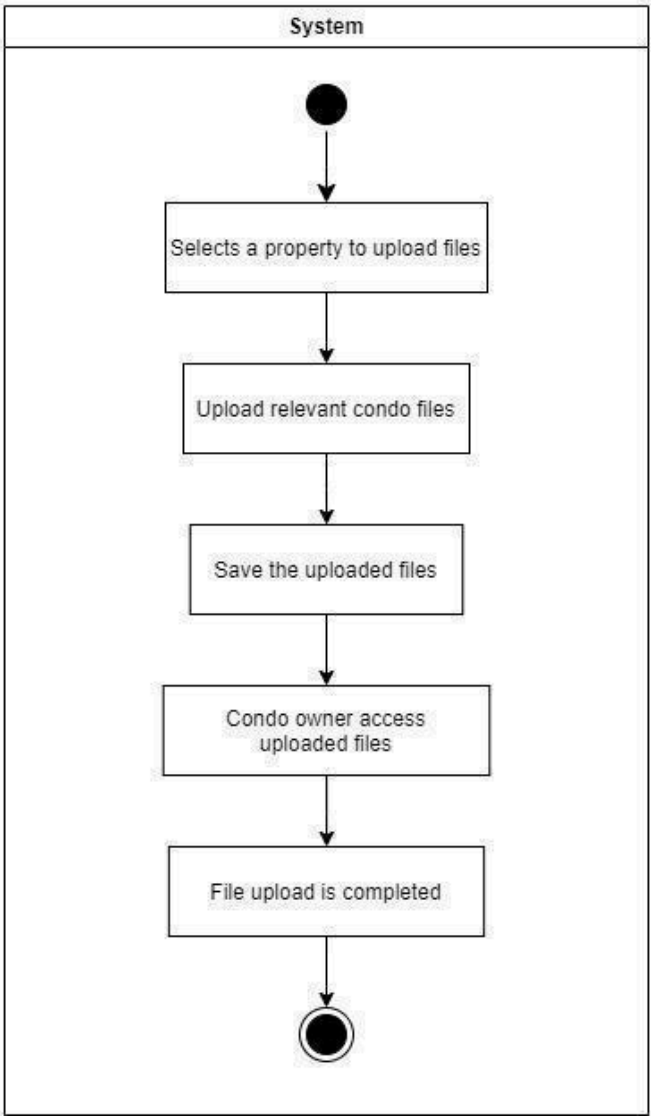
ID: 004


System
Condo owner logs in
Condo owner requests the dashboard
System fetches property and financial details
Display a comprehensive dashboard
Condo owner views the dashboard

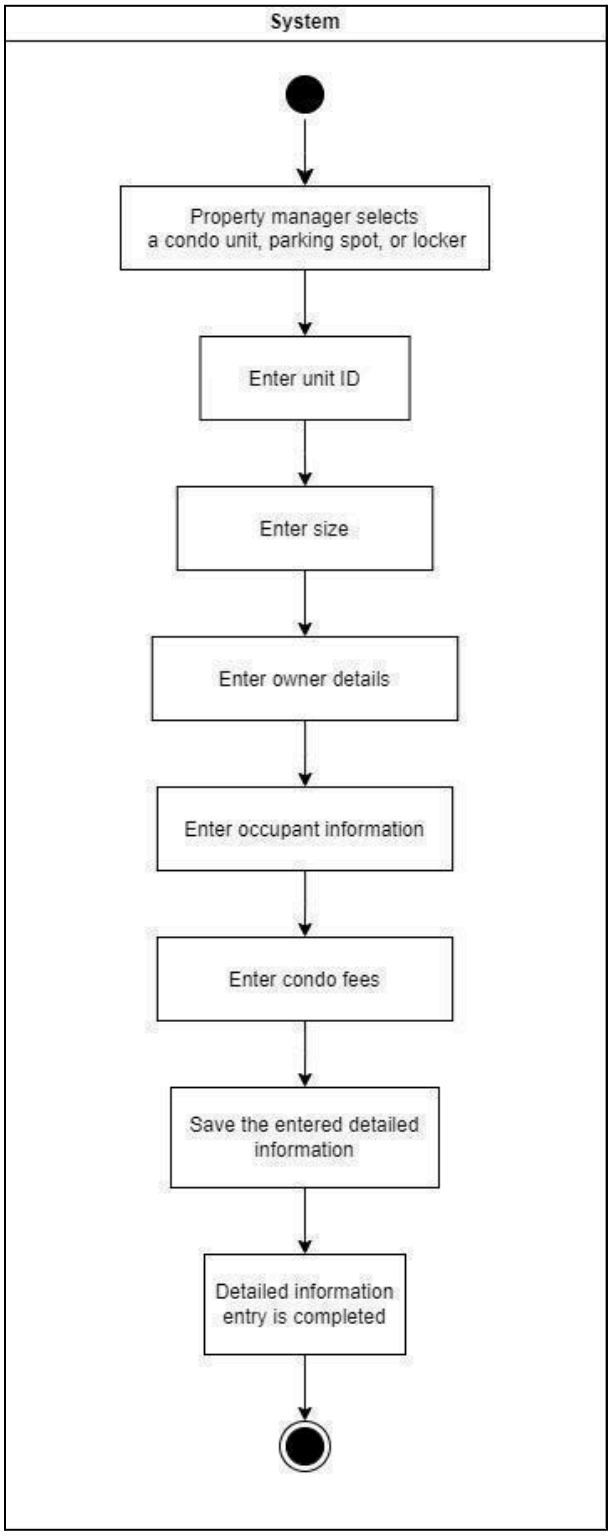
ID: 005


System
Property manager initiates property profile creation
Enter property details
Save the property profile details
Property profile creation is completed

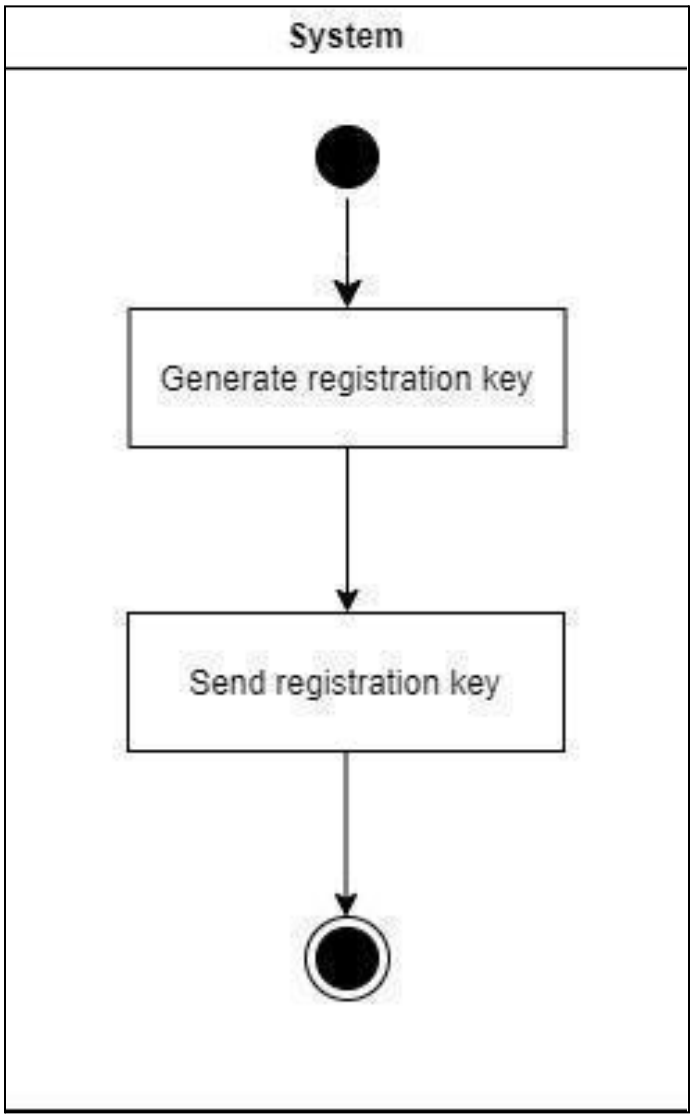
ID: 006


System
Selects a property to upload files
Upload relevant condo files
Save the uploaded files
Condo owner access uploaded files
File upload is completed

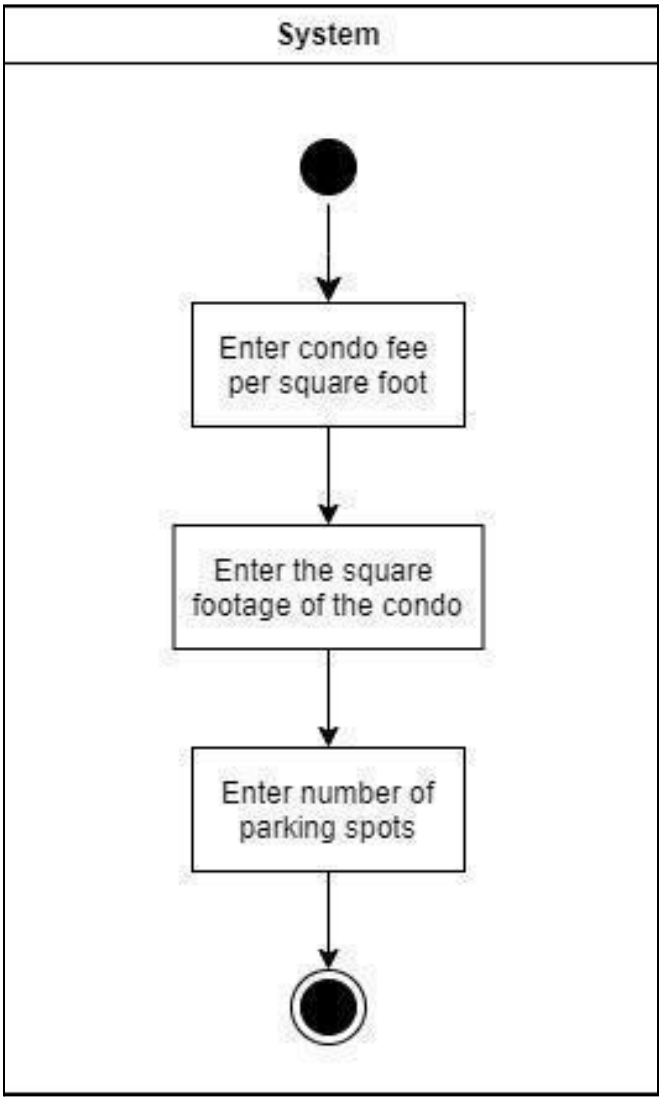
ID: 007


System
Property manager selects a condo unit, parking spot, or locker
Enter unit ID
Enter size
Enter owner details
Enter occupant information
Enter condo fees
Save the entered detailed information
Detailed information entry is completed

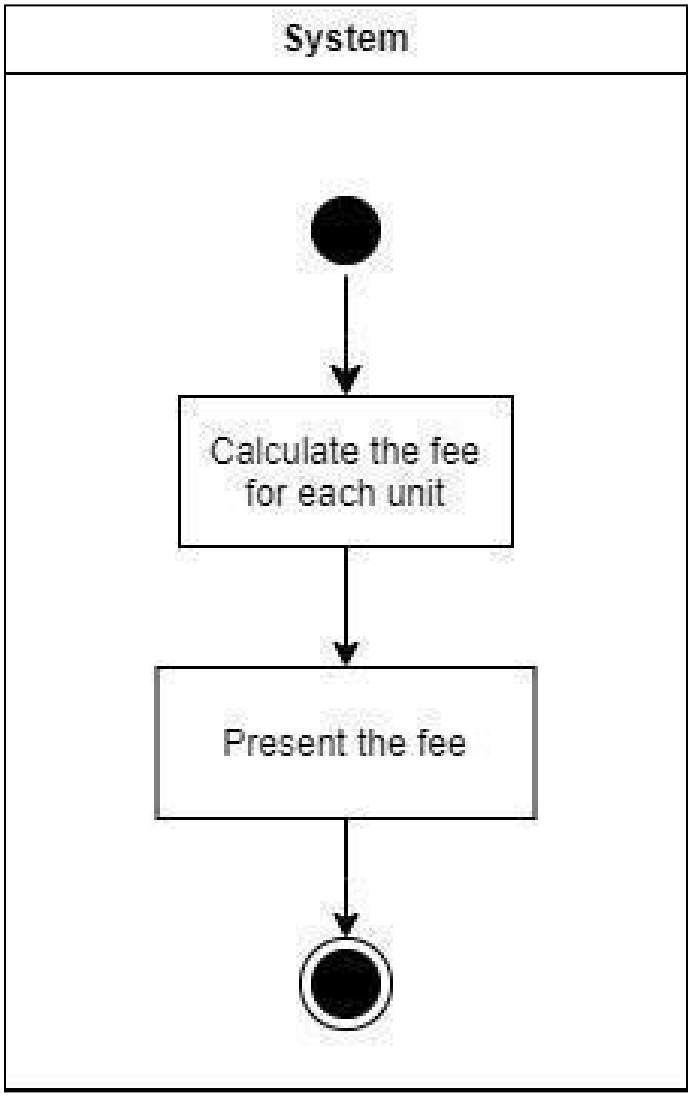
ID: 008


System
Generate registration key
Send registration key

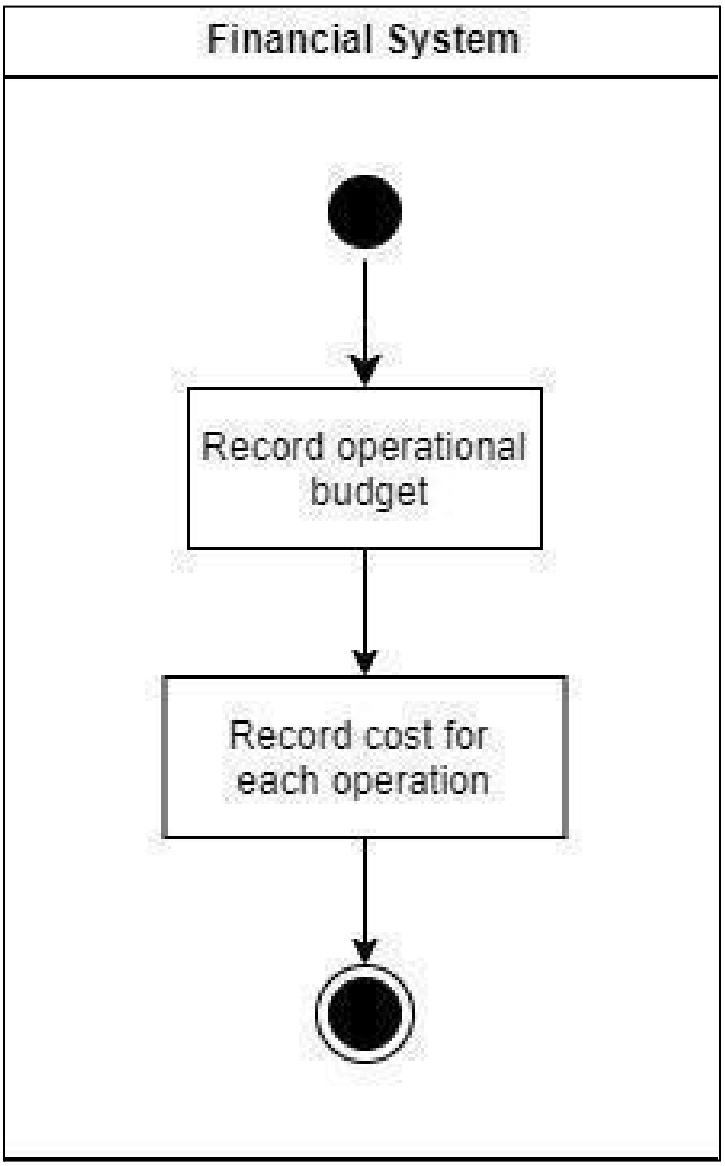
ID: 009


System
Enter condo fee per square foot
Enter the square footage of the condo
Enter number of parking spots

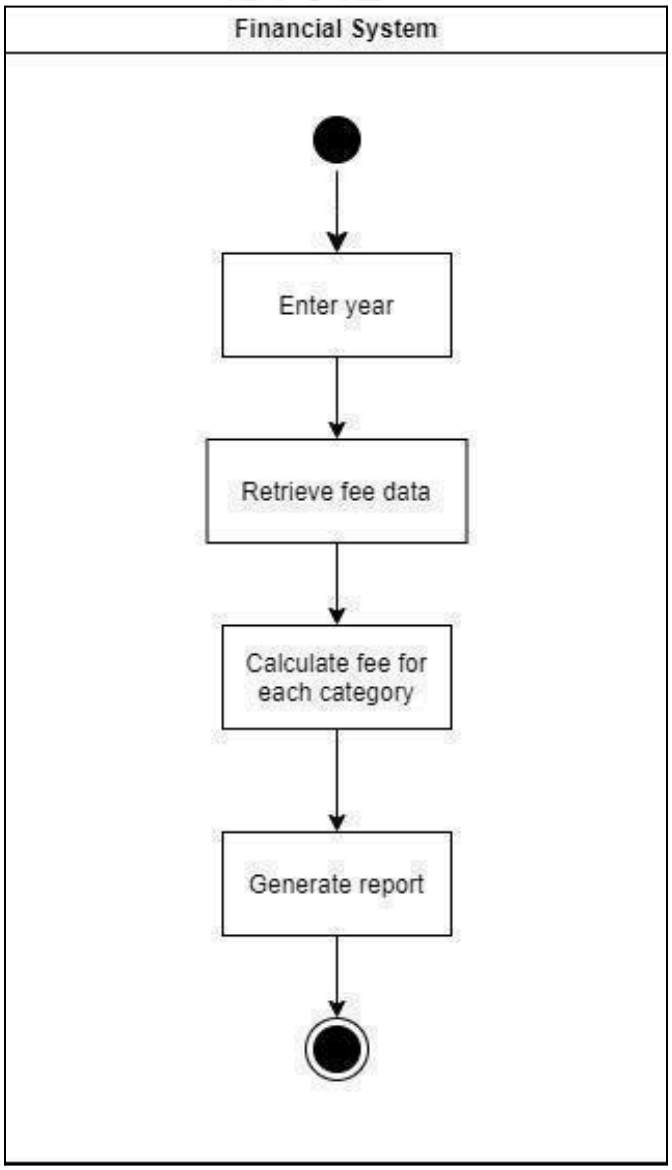
ID: 010


System
Calculate the fee for each unit
Present the fee

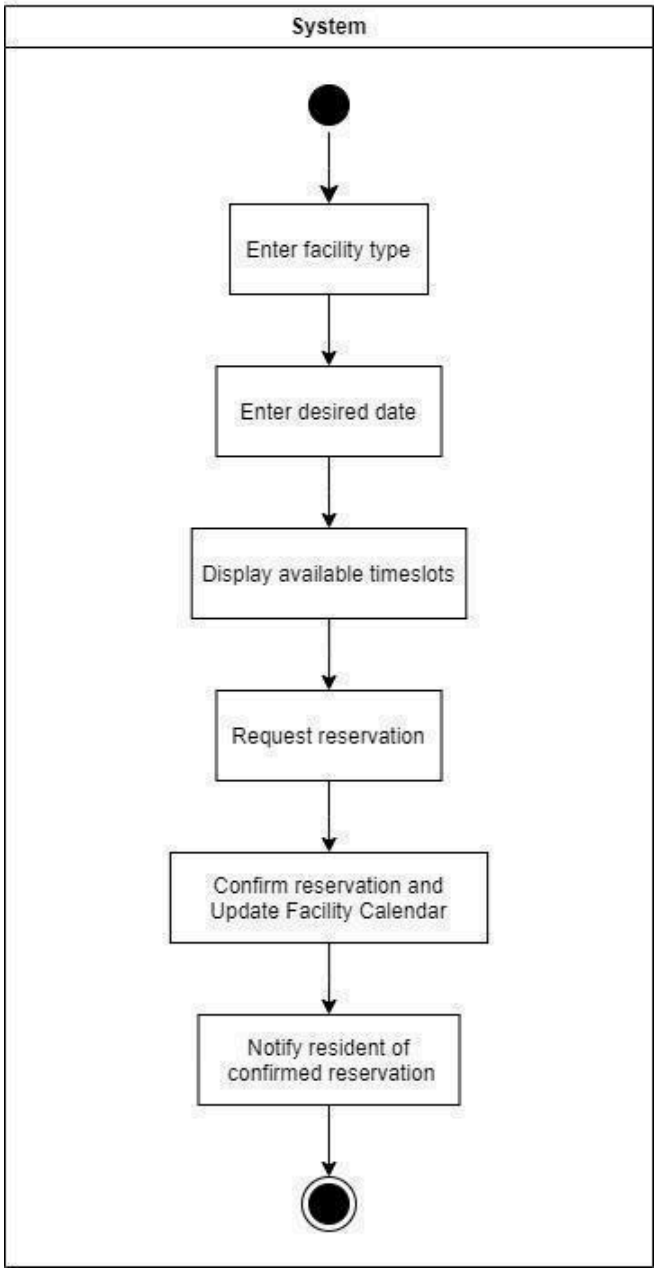
ID: 011


Financial System
Record operational budget
Record cost for each operation

ID: 012


Financial System
Enter year
Retrieve fee data
Calculate fee for each category
Generate report

ID: 013-014



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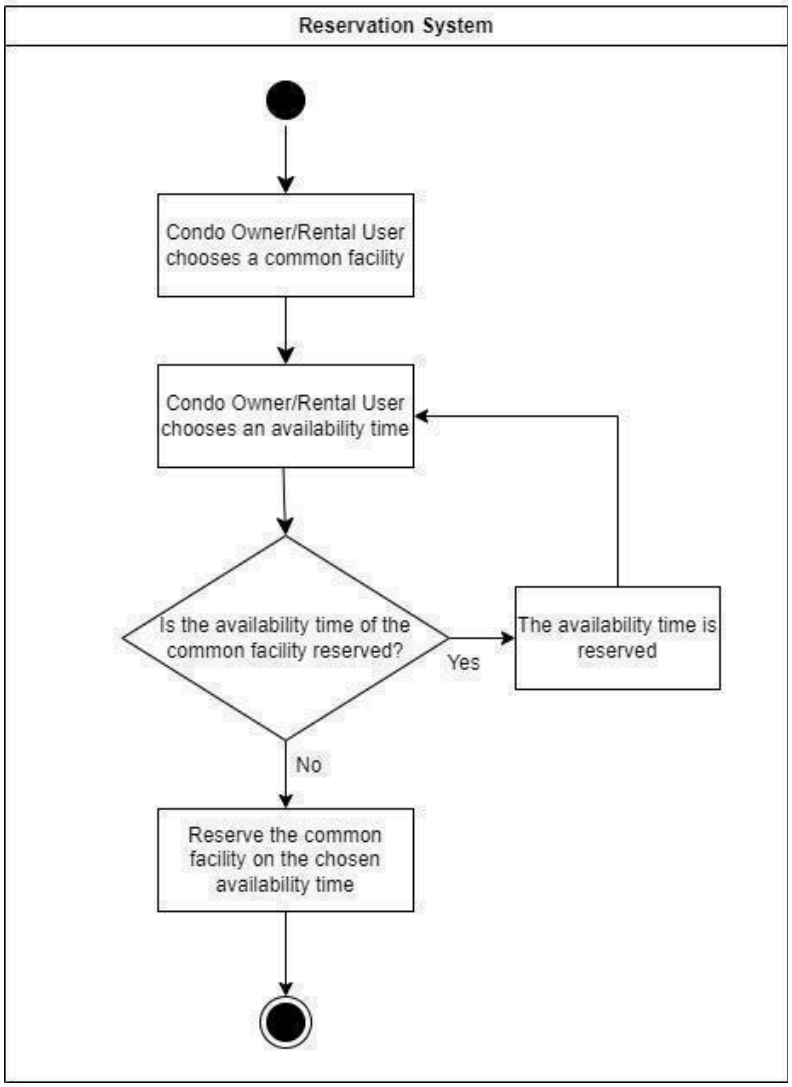
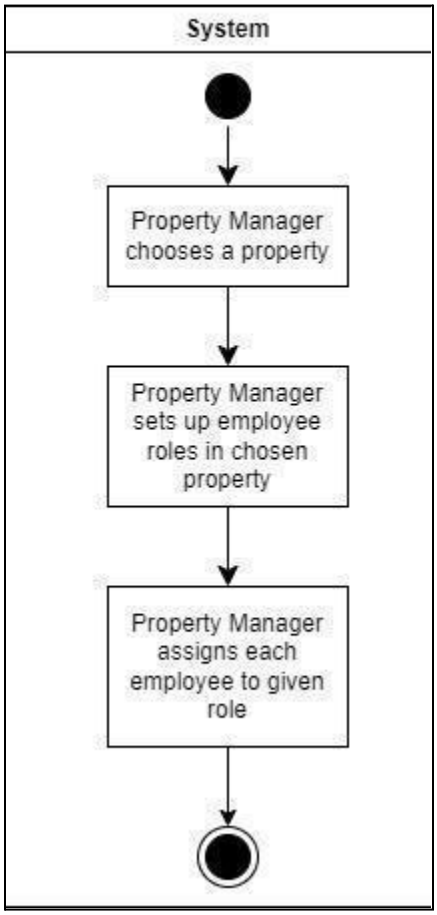
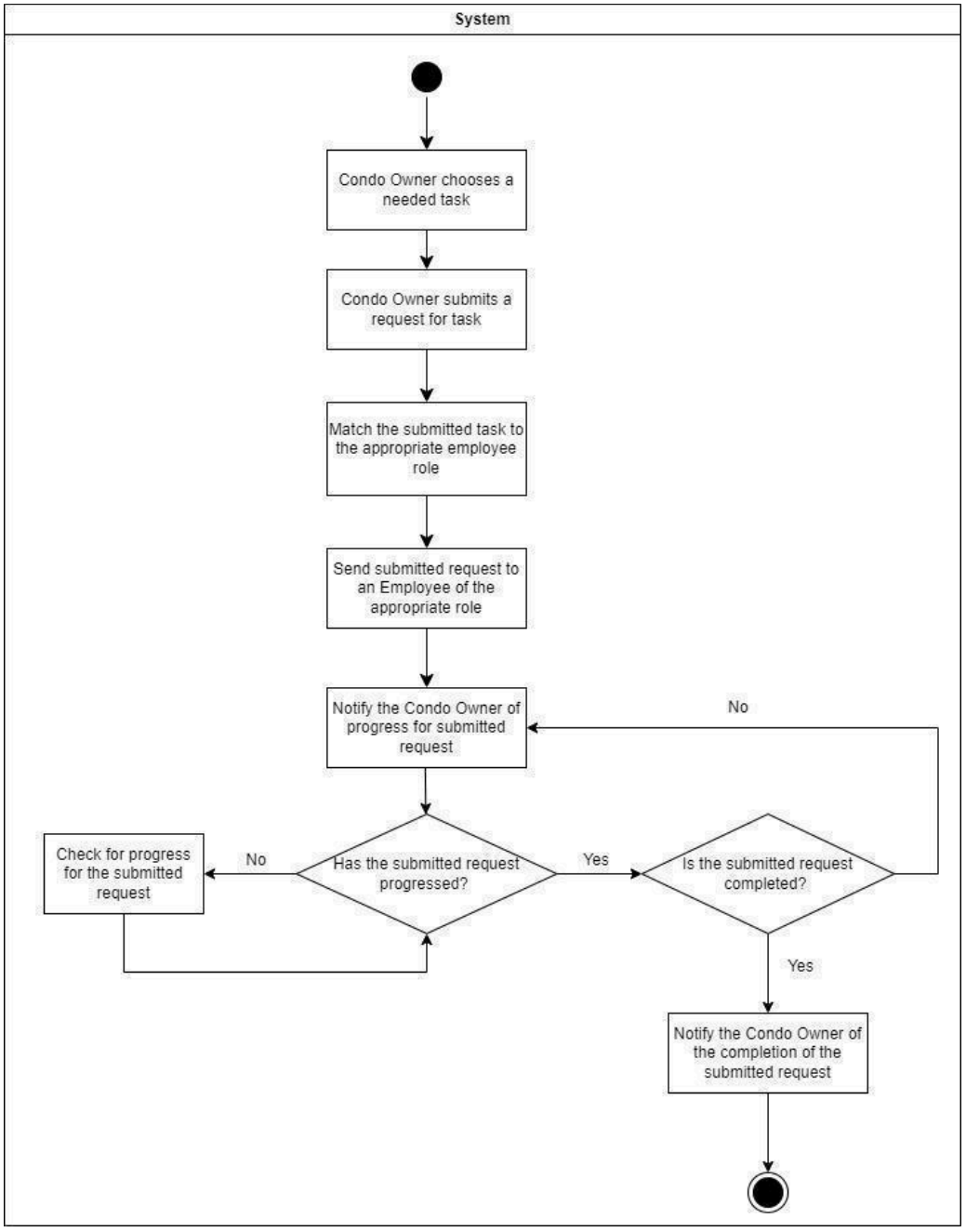


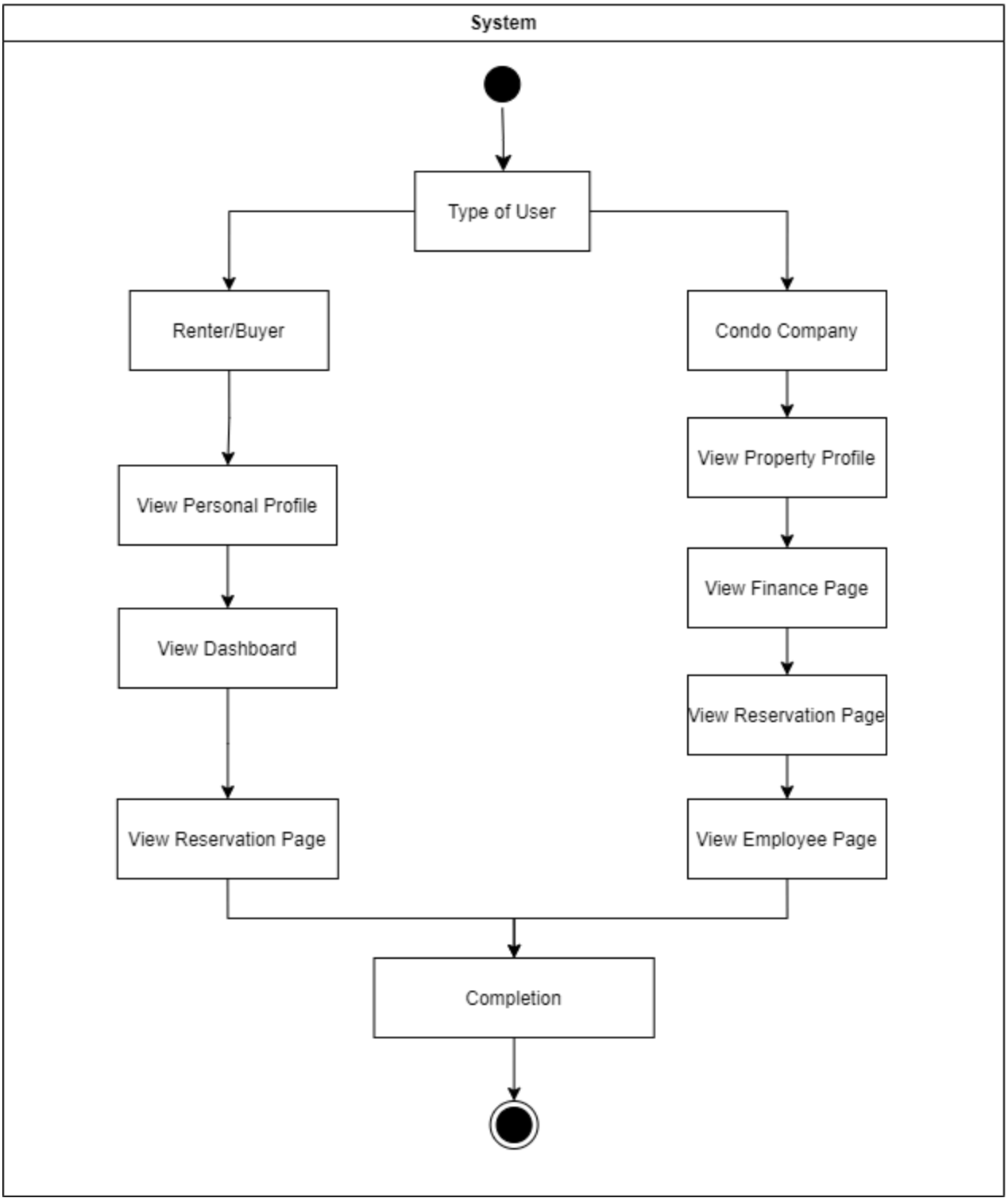
ID: 017



ID: 018 - 019 - 020

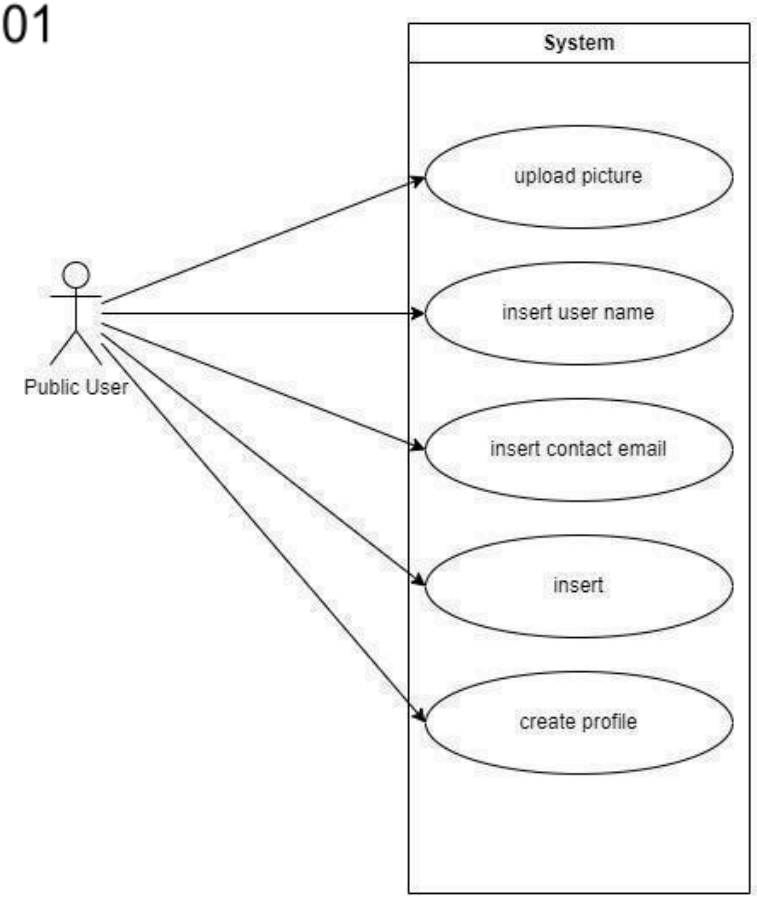


ID: 021

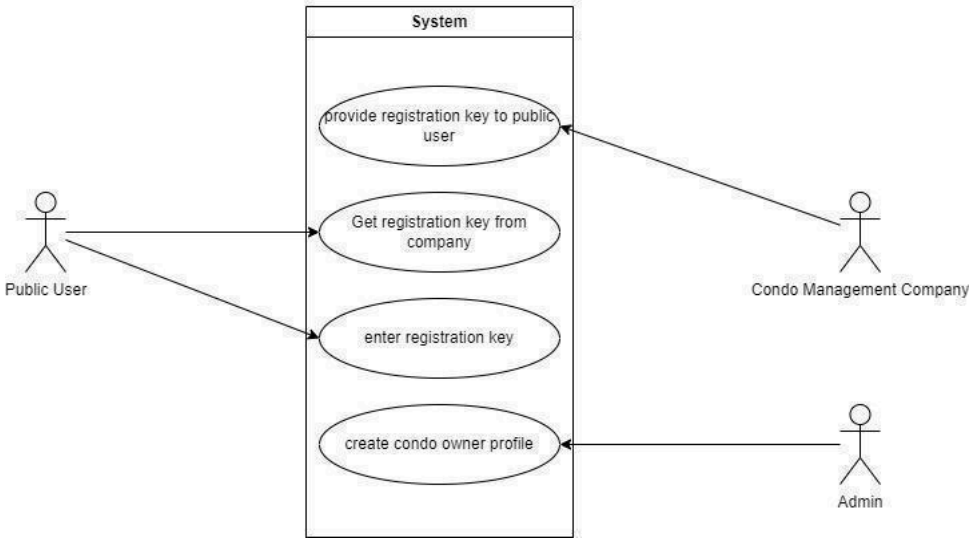

System
Type of User
Renter/Buyer
Condo Company
View Personal Profile
View Property Profile
View Dashboard
View Finance Page
View Reservation Page
View Reservation Page
View Employee Page
Completion

Use Case Diagrams

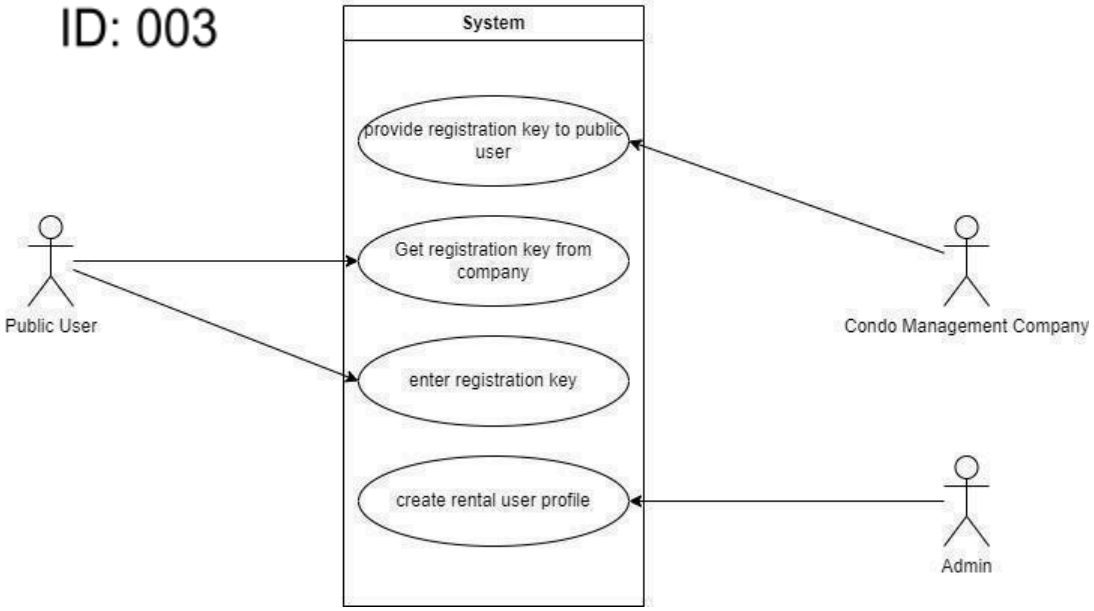
ID: 001



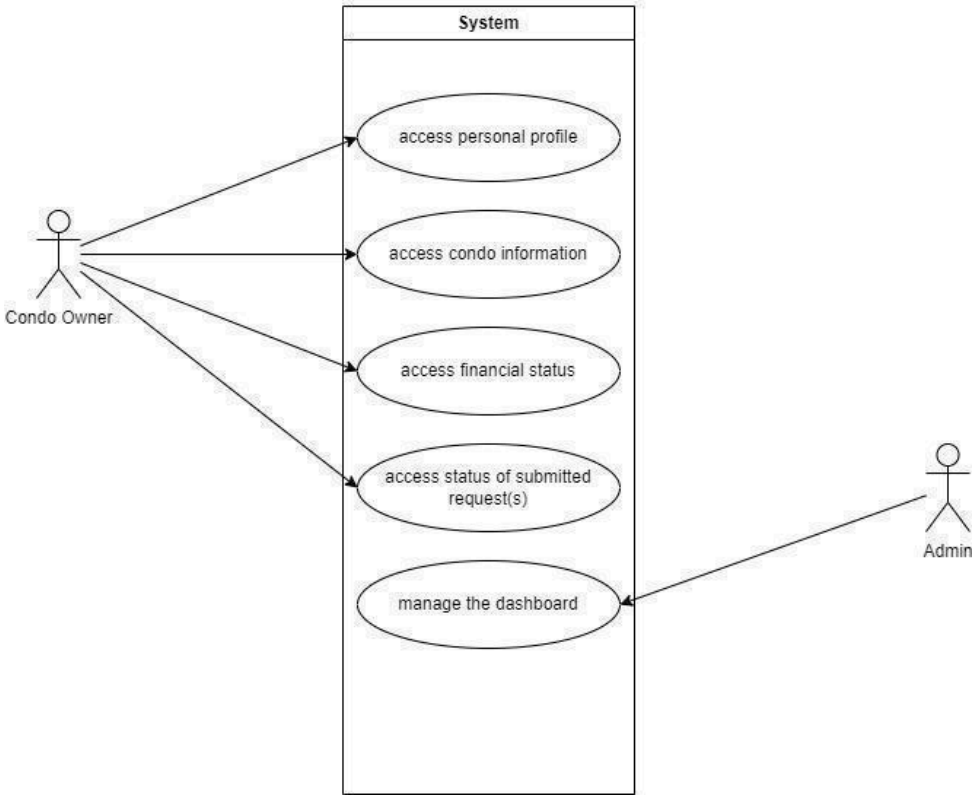
ID: 002



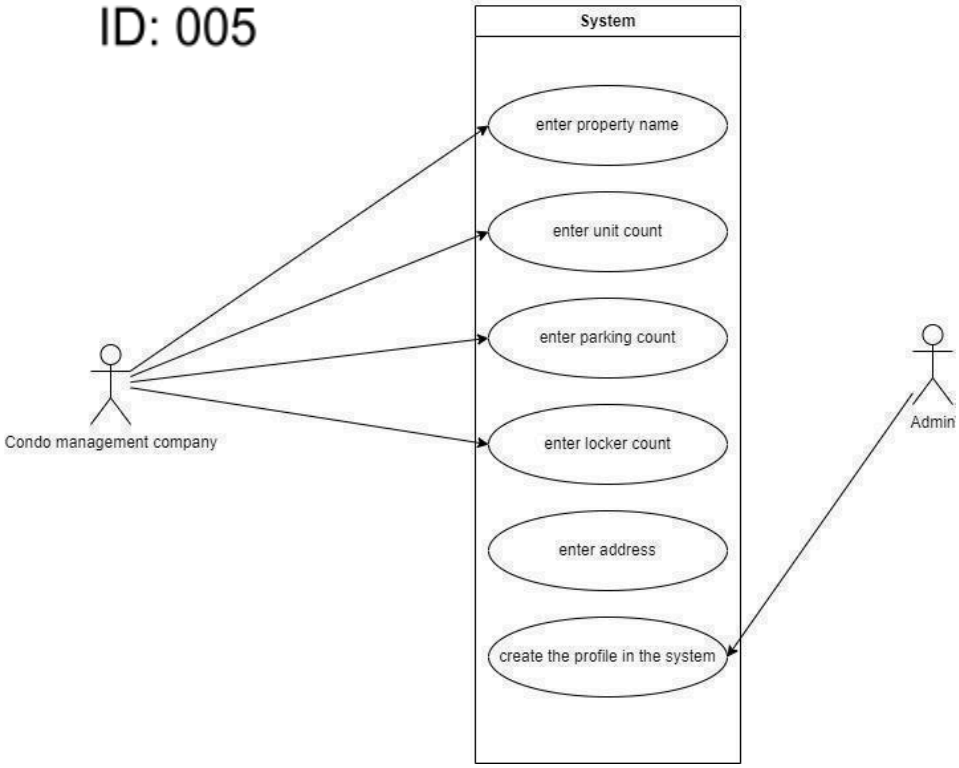
ID: 003


System
provide registration key to public user
Get registration key from company
enter registration key
create rental user profile
Public User
Condo Management Company
Admin

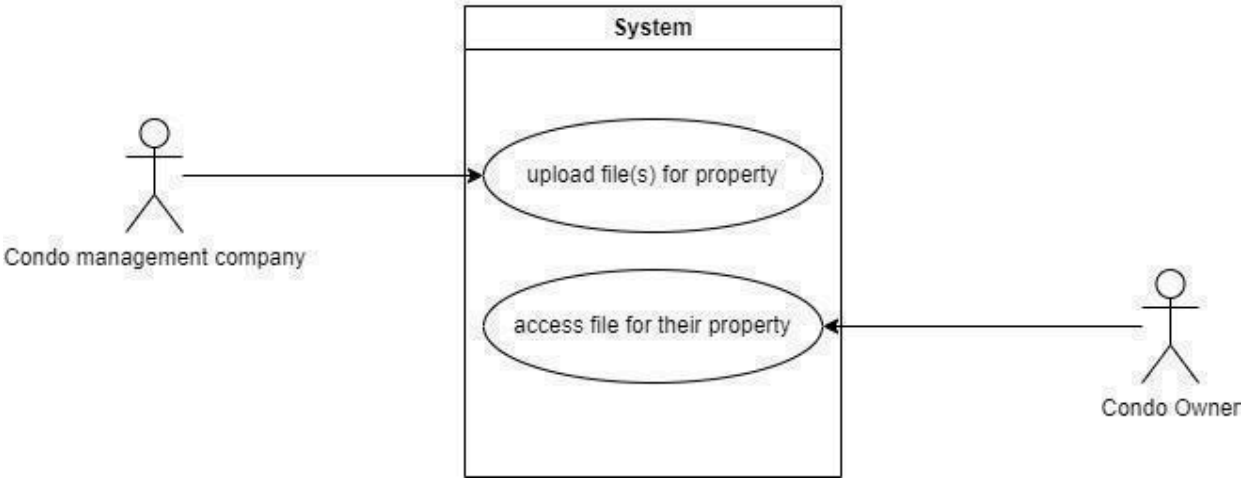
ID: 004


System
access personal profile
access condo information
access financial status
access status of submitted request(s)
manage the dashboard
Condo Owner
Admin

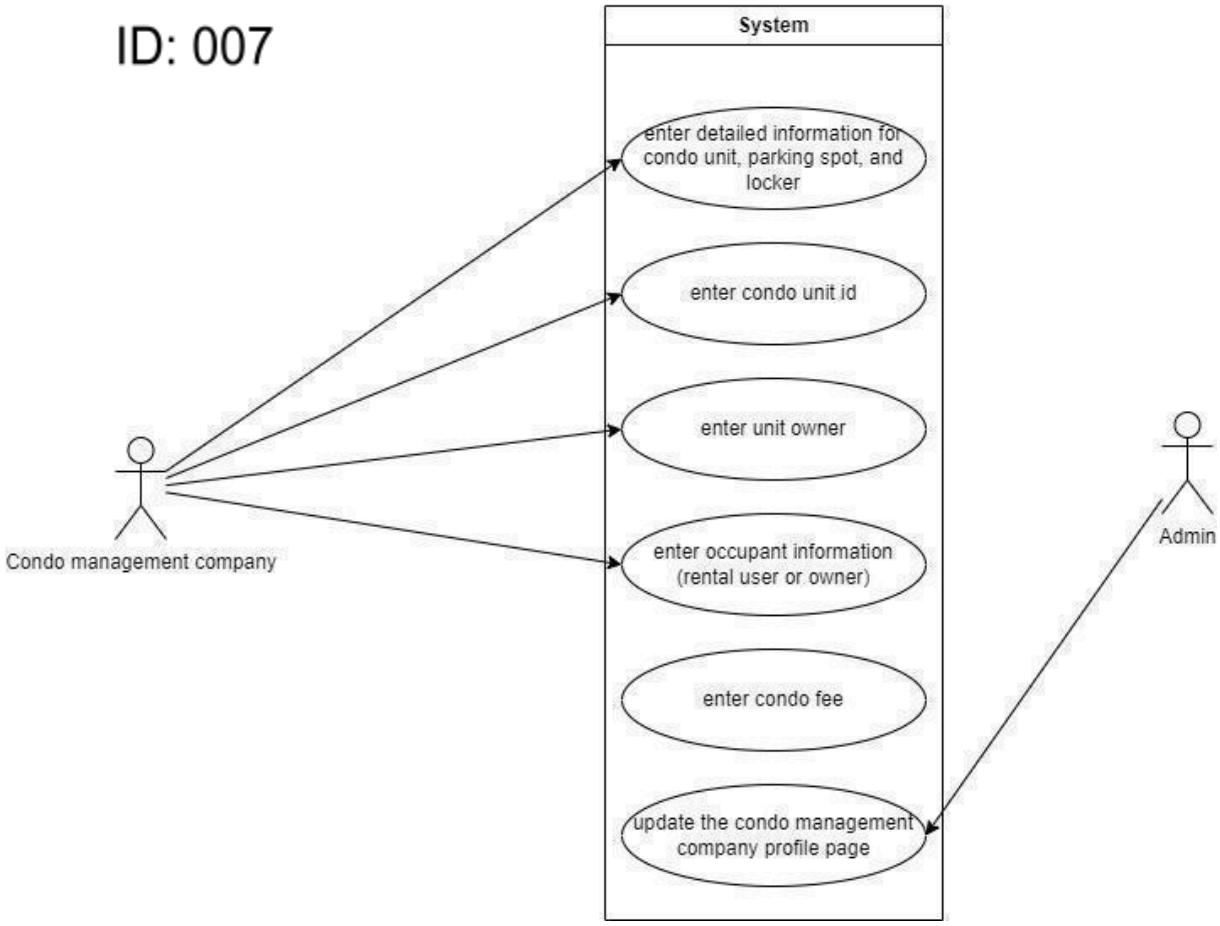
ID: 005


System
enter property name
enter unit count
enter parking count
enter locker count
enter address
create the profile in the system
Condo management company
Admin

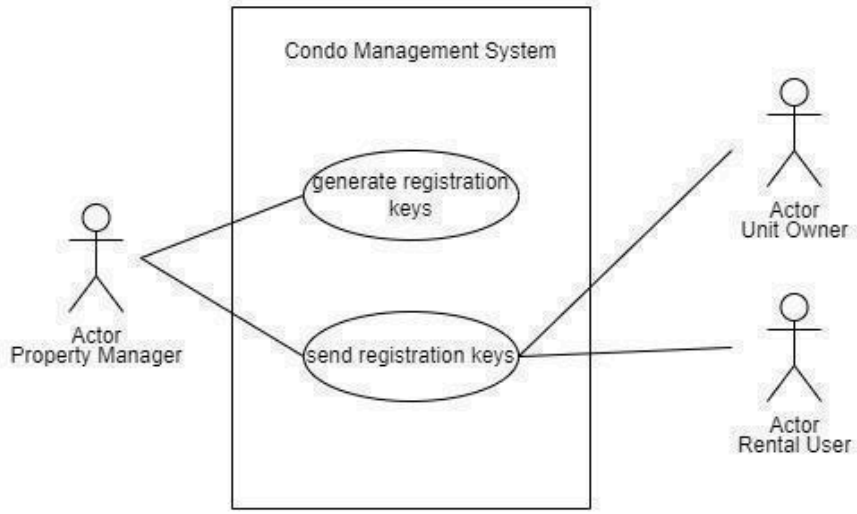
ID: 006


System
upload file(s) for property
access file for their property
Condo management company
Condo Owner

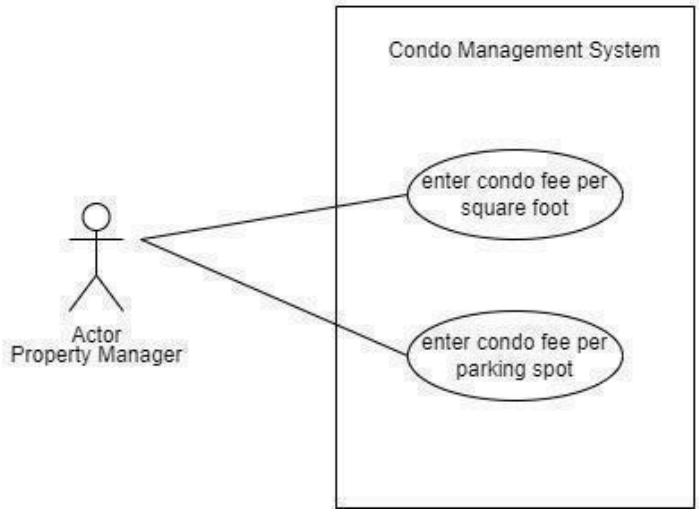
ID: 007


System
enter detailed information for condo unit, parking spot, and locker
enter condo unit id
enter unit owner
enter occupant information (rental user or owner)
enter condo fee
update the condo management company profile page
Condo management company
Admin

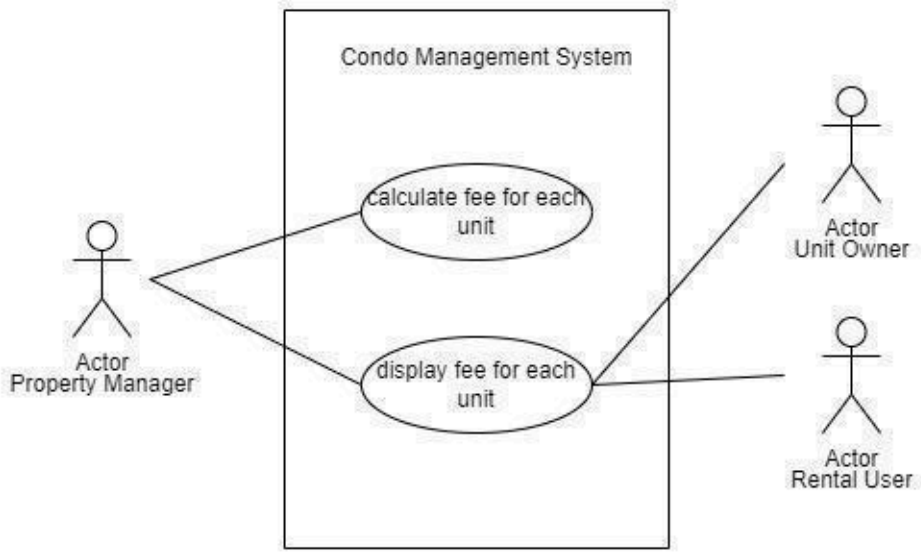
ID: 008


Condo Management System
generate registration keys
send registration keys
Actor Property Manager
Actor Unit Owner
Actor Rental User

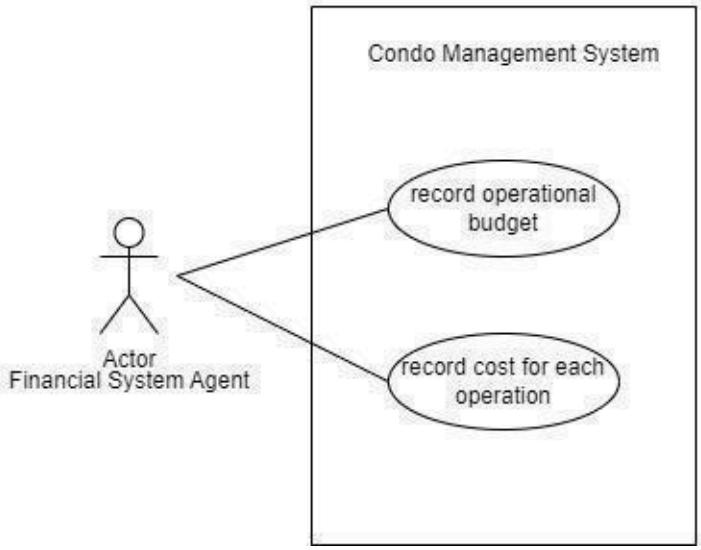
ID: 009



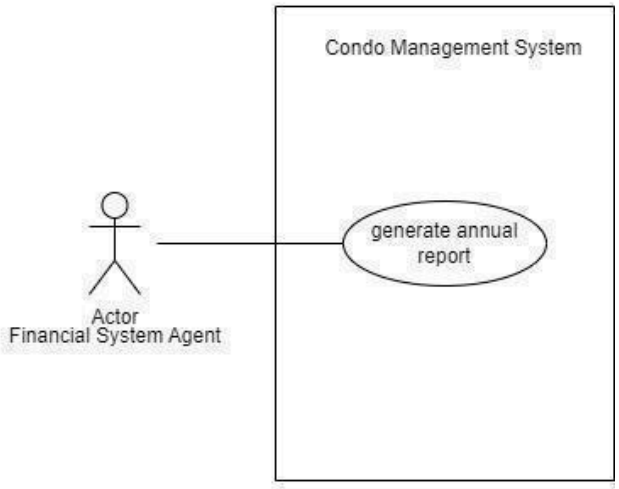
ID: 010



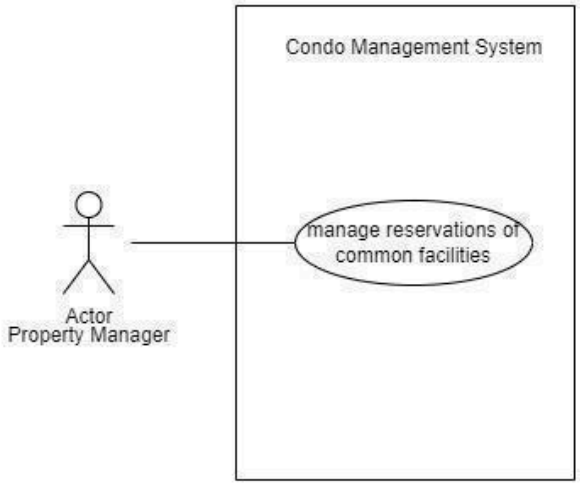
ID: 011



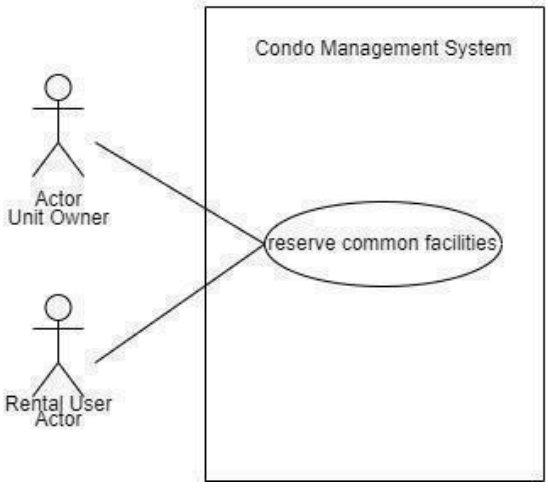
User Story #12



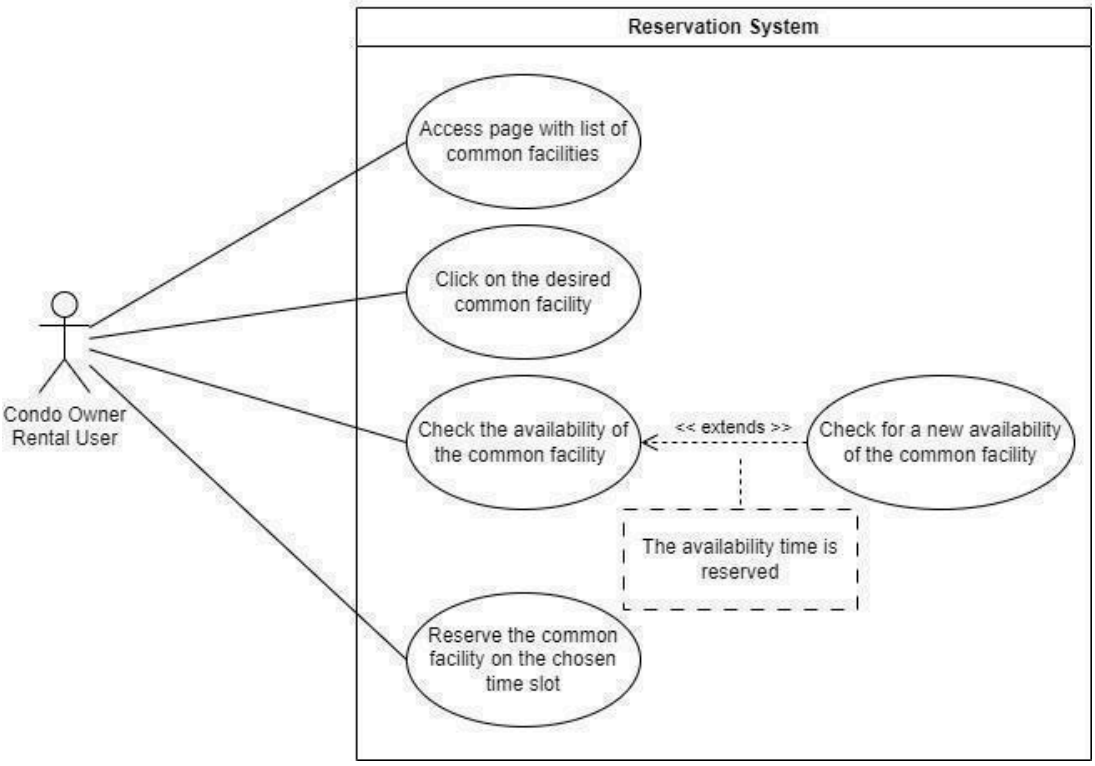
User Story #13



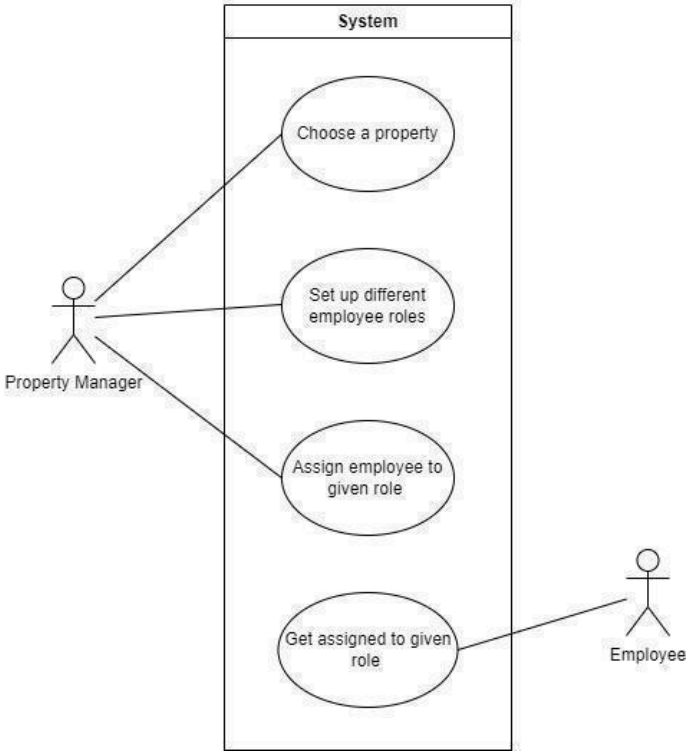
User Story #14



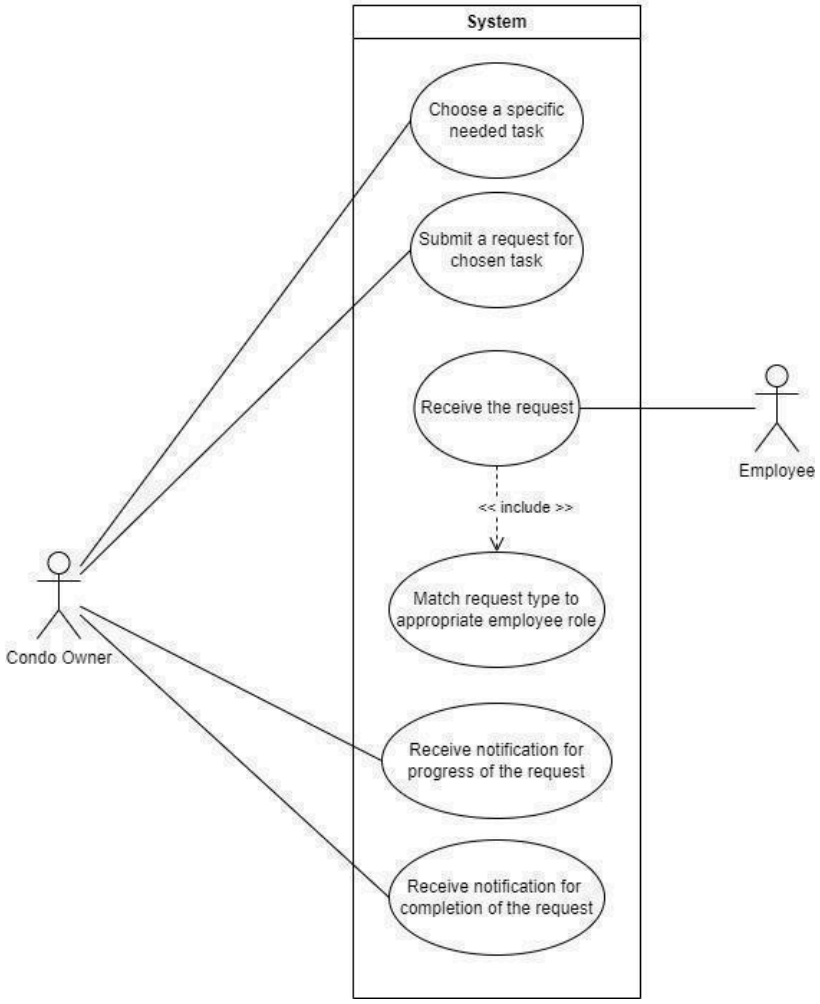
User Story #15-16



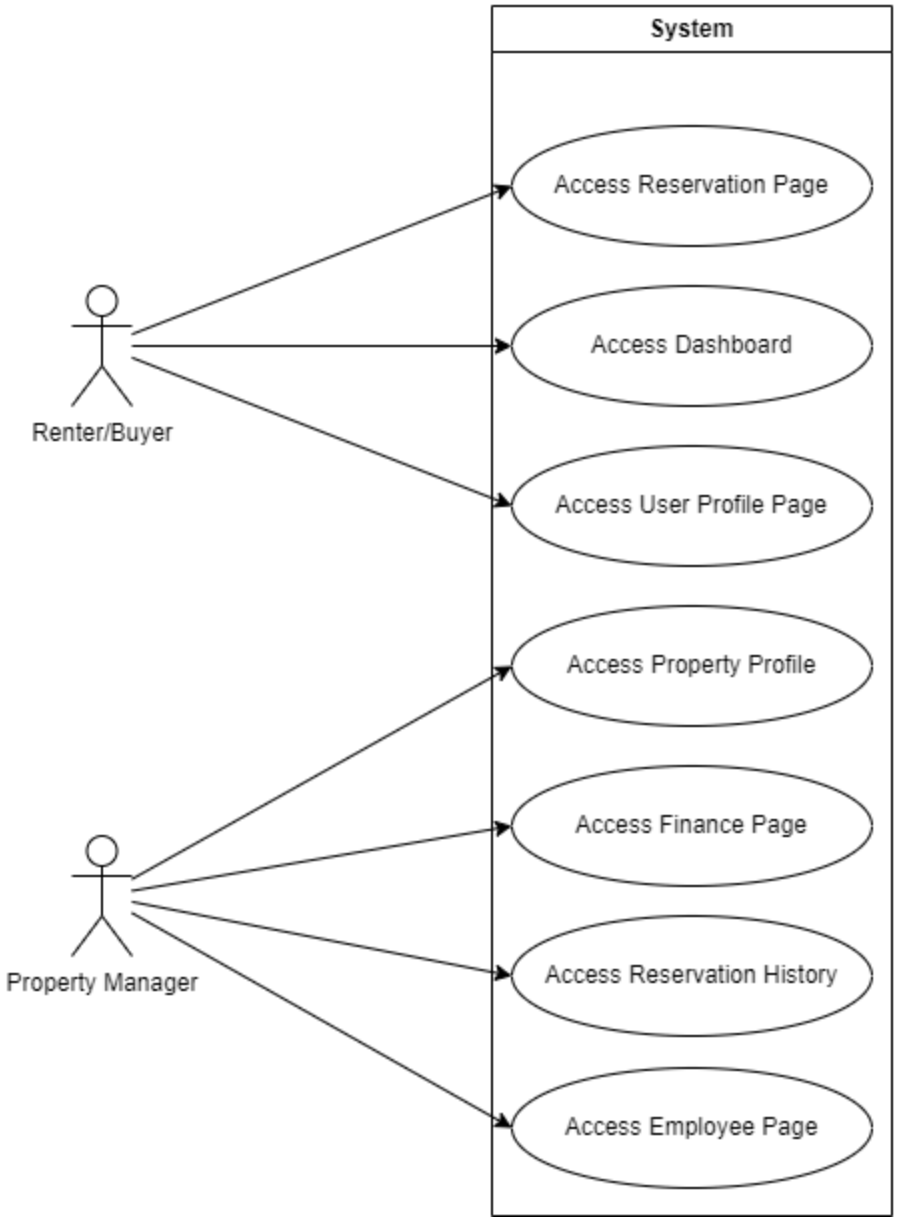
User Story #17



User Story #18-19-20



ID: 021


System
Access Reservation Page
Access Dashboard
Access User Profile Page
Access Property Profile
Access Finance Page
Access Reservation History
Access Employee Page
Renter/Buyer
Property Manager

Risk Assessment & Management Plan

Purpose of the risk assessment and management plan along with its benefits

The Risk Assessment and Management Plan serves as a proactive approach to identify, assess, prioritize, and mitigate potential risks that may arise during the project lifecycle. Its purpose is to anticipate challenges, minimize negative impacts, and ensure the successful completion of the project within the defined constraints of time, budget, and quality. By systematically identifying and addressing risks, the plan helps to enhance project visibility, stakeholder confidence, and overall project resilience.

How the risks and assessment were identified among our team

The identification and assessment of risks within our project were predominantly conducted through regular team meetings. During these meetings, team members engaged in open discussions and collaborative brainstorming sessions to identify potential risks across various aspects of the project, such as technical complexities, resource constraints, and communication challenges. Drawing upon the diverse perspectives and expertise of each team member, we collectively examined project documentation, shared insights from past experiences, and solicited input from stakeholders to comprehensively identify and assess risks. Through this iterative process of dialogue and reflection, we prioritized risks based on their likelihood and potential impact, laying the groundwork for effective risk management strategies and mitigation plans.

Impact / Probability	Low	Medium	High
Low			**#6, #16**
Medium		**#20**	**#1, #9, #11, #13**
High		**#25**	**#24**

Figure 5: Risk management chart

Legend:

High – Greater than <70%> probability of occurrence

Medium – Between <30%> and <70%> probability of occurrence

Low – Below <30%> probability of occurrence

ID	User Story ID	Risk	Type	Probability	Impact	Mitigation
1	1	Poor usability due to complex profile setup	User Experience	Medium	High	Conduct user testing and feedback sessions throughout development. Prioritize simplicity and clarity in design. Provide intuitive tooltips and guidance for profile setup.
2	6	Vulnerabilities in condo file upload leading to unauthorized access	Technical	Low	High	Implement input validation and file type restrictions. Use secure file storage mechanisms and regularly audit access controls.
3	9	Incorrect calculation of condo fees due to coding errors	Technical	Medium	High	Implement thorough unit testing and code reviews for fee calculation logic. Utilize standardized libraries or frameworks for financial calculations.
4	11	Inadequate logging of financial transactions leading to auditing challenges	Technical	Medium	High	Implement comprehensive logging of financial operations with proper data encryption. Regularly review and monitor logs for anomalies.
5	13	Performance issues in reservation system due to inefficient code	Technical	Medium	High	Optimize database queries and server-side processing. Implement caching mechanisms for frequently accessed data. Conduct load testing to identify and address performance bottlenecks.
6	16	Security vulnerabilities in reservation system leading to data breaches	Management	Low	High	Follow secure coding practices, such as input validation and parameterized queries, to prevent SQL injection and other attacks.
7	20	Lack of notification updates leading to user frustration	Management	Medium	Medium	Implement real-time notification system, provide manual refresh option. Optimize

						notification delivery, prioritize critical updates.
8	N/A	Deployment failure leading to website downtime	Technical	Medium	High	Conduct thorough testing in staging environment before deployment. Implement automated deployment scripts with rollback procedures. Utilize a gradual deployment approach to minimize impact.
9	N/A	Security vulnerabilities introduced during deployment	Security	Low	High	Implement secure deployment practices, such as code signing and secure transmission protocols. Regularly update and patch deployment tools and dependencies. Conduct security audits before and after deployment.
10	2,3	Registration key generation errors leading to user authentication issues	Technical	Low	High	Implement thorough validation checks during registration key generation process. Provide error handling mechanisms and user-friendly error messages. Regularly monitor key generation logs for anomalies and discrepancies.

Table 1: List of identified risks

Link to the Risk Analysis UrbanKey:

Risk analysis UrbanKey.xlsx

Sprint 5

Front-End Testing

Introduction:
Front-end testing is a crucial aspect of ensuring the reliability and functionality of web applications. In our Condo Management System Website project, we employed Jest, a widely used testing library compatible with React, to conduct front-end testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

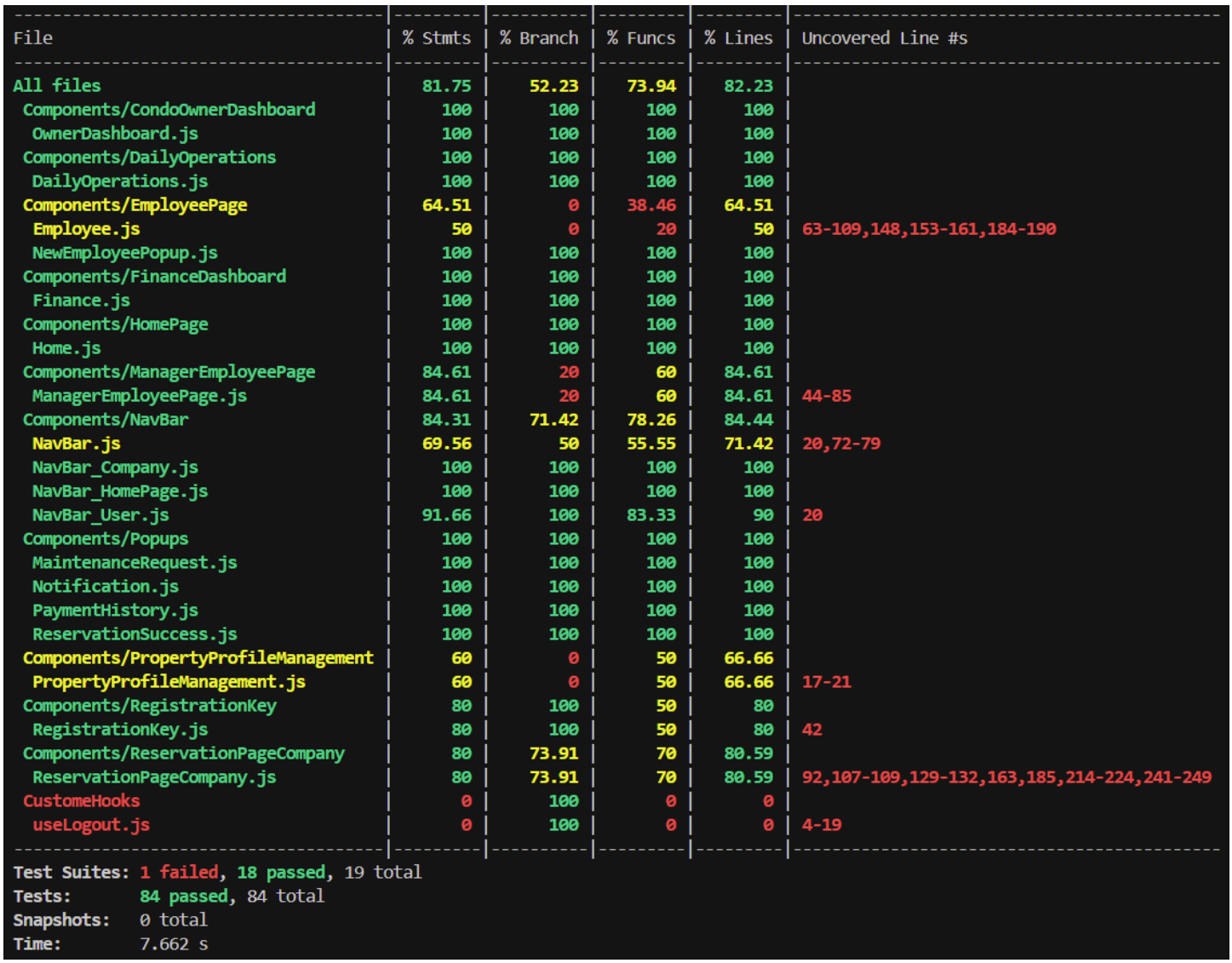
Tools Used:
We employed Jest as our primary testing library due to its seamless integration with React. Jest offers a robust framework for creating and executing tests, making it an ideal choice for our front-end testing needs.

Testing Approach:
To organize our testing efforts, we established a dedicated folder named "Front-end Testing" within the src directory of our project repository. Within this folder, we created individual testing files corresponding to each front-end page of our website. Following the naming convention recommended by Jest, each testing file was named after its respective page, suffixed with .test.js.

For example, if a page in our application is named Employee.js, we created a corresponding test file named Employee.test.js. Within these test files, we crafted unit tests focusing on the key features and functionalities of each page. These tests were designed to verify the expected behavior of the front-end components and ensure that they operate as intended.

Upon completing the creation of test files for each front-end page, we executed the tests using the command “npm test” in the terminal. Additionally, to assess the code coverage achieved by our testing suite, we utilized the command “npm test -- --coverage”. This command generated detailed insights into the extent of code covered by our tests, allowing us to identify areas that require further testing or optimization.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our testing efforts. The following screenshots illustrate the code coverage metrics obtained from our front-end testing:



File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	81.75	52.23	73.94	82.23	
Components/CondoOwnerDashboard	100	100	100	100	
OwnerDashboard.js	100	100	100	100	
Components/DailyOperations	100	100	100	100	
DailyOperations.js	100	100	100	100	
Components/EmployeePage	64.51	0	38.46	64.51	
Employee.js	50	0	20	50	63-109,148,153-161,184-190
NewEmployeePopup.js	100	100	100	100	
Components/FinanceDashboard	100	100	100	100	
Finance.js	100	100	100	100	
Components/HomePage	100	100	100	100	
Home.js	100	100	100	100	
Components/ManagerEmployeePage	84.61	20	60	84.61	
ManagerEmployeePage.js	84.61	20	60	84.61	44-85
Components/NavBar	84.31	71.42	78.26	84.44	
NavBar.js	69.56	50	55.55	71.42	20,72-79
NavBar_Company.js	100	100	100	100	
NavBar_HomePage.js	100	100	100	100	
NavBar_User.js	91.66	100	83.33	90	20
Components/Popups	100	100	100	100	
MaintenanceRequest.js	100	100	100	100	
Notification.js	100	100	100	100	
PaymentHistory.js	100	100	100	100	
ReservationSuccess.js	100	100	100	100	
Components/PropertyProfileManagement	60	0	50	66.66	
PropertyProfileManagement.js	60	0	50	66.66	17-21
Components/RegistrationKey	80	100	50	80	
RegistrationKey.js	80	100	50	80	42
Components/ReservationPageCompany	80	73.91	70	80.59	
ReservationPageCompany.js	80	73.91	70	80.59	92,107-109,129-132,163,185,214-224,241-249
CustomeHooks	0	100	0	0	
useLogout.js	0	100	0	0	4-19

Test Suites: 1 failed, 18 passed, 19 total
Tests: 84 passed, 84 total
Snapshots: 0 total
Time: 7.662 s

Figure 6: Front-End Code Coverage

We have three JavaScript components— Login.js, Profile.js, and SignUp.js — for which we have created corresponding .test.js files using Jest. However, these tests consistently fail due to an issue with the ***`import axios from 'axios';`*** statement. After exhausting all possible solutions to resolve this import issue, we have decided to exclude these components from our coverage calculations. Despite this, our overall coverage remains robust. Specifically, our Statement Coverage and Line Coverage both exceed 80%, while our Function Coverage stands at 73.94%, nearing our target of 80%. This demonstrates significant progress in enhancing our testing framework and overall coverage metrics. Thus, we consider this phase of our testing strategy to be largely successful, closely aligning with our goal of achieving 80% coverage.

Link to Github Front-End Testing (Test Cases):

https://github.com/Tanya-STY/UrbanKey/tree/main/urbankey/src/FrontEndTesting

Back-End Testing

Introduction:
Backend testing is essential for ensuring the functionality, performance, and security of web applications. In our Condo Management System Website project, we employed Pytest, a powerful testing framework for Python, to conduct backend testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

Tools Used:
Pytest was selected as the primary testing framework for our backend testing needs. With its simplicity and flexibility, Pytest provides a comprehensive suite of features for writing and executing tests in Python applications, making it an ideal choice for our project.

Testing Approach:
To organize and streamline our backend testing efforts, we established a dedicated folder named "backend" within the project repository. Within this folder, we created individual testing files corresponding to different backend functionalities and pages of our website.

For instance, if a backend module is responsible for handling employee-related operations, we created a test file named test_employee.py within the backend folder. Following the conventions of Pytest, we crafted test functions within these files to validate the behavior of backend components and functionalities.

Our testing approach focused on covering various aspects of backend functionality, including data validation, business logic, API endpoints, and database interactions. Each test function was designed to verify specific scenarios and edge cases, ensuring comprehensive test coverage.

Upon completing the creation of test files and test functions, we executed the tests using Pytest's command-line interface. Pytest automatically discovered and executed the test cases within the backend folder, providing detailed feedback on test results and identifying any failures or errors encountered during testing.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our backend testing efforts. By integrating code coverage measurement into our testing workflow, we gained visibility into the percentage of code executed by our test suite and identified areas that require additional testing or optimization.

Coverage report: 90%

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Module	*statements*	*missing*	*excluded*	*coverage* ↓
__init__.py	0	0	0	100%
config.py	6	0	0	100%
model__init__.py	0	0	0	100%
model\handleRefresh.py	22	0	0	100%
routes__init__.py	0	0	0	100%
services__init__.py	0	0	0	100%
tests__init__.py	0	0	0	100%
tests\test_auth.py	111	0	0	100%
tests\test_tokens.py	0	0	0	100%
tests\test_todo.py	135	1	0	99%
model\user.py	36	4	0	89%
routes\user_routes.py	27	3	0	89%
app.py	20	3	0	85%
services\token_service.py	27	6	0	78%
routes\auth_routes.py	18	5	0	72%
model\auth.py	81	26	0	68%
Total	**483**	**48**	**0**	**90%**

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Figure 7: Back-End Code Coverage

Coverage for **app.py**: 85%

20 statements | 17 run | 3 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
# app.py

from flask import Flask
from flask_cors import CORS
from flask_bcrypt import Bcrypt
from config import users, client
from routes.auth_routes import auth_routes  # Import route blueprints
from routes.user_routes import user_routes

app = Flask(__name__)
app.config['SECRET_KEY'] = '0622d0d552f33f6309180901'
app.config['REFRESH_TOKEN_SECRET'] = '062444442d0d554442f33f63091804444901'
# CORS(app, origins='http://localhost:3000', supports_credentials=True)

cors_options = {
    "origins": "http://localhost:3000",
    "supports_credentials": True,
    "options_success_status": 200
}
CORS(app, **cors_options)


# Register route blueprints
app.register_blueprint(auth_routes)
app.register_blueprint(user_routes)

if __name__ == "__main__":
    app.run(debug=True)

try:
    client.admin.command('ping')
    print("Pinged your deployment. You successfully connected to MongoDB!")
except Exception as e:
    print(e)
```

Coverage for **model\handleRefresh.py**: 100%

22 statements | 22 run | 0 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
from flask import request, jsonify
from config import users
import jwt
from jwt.exceptions import ExpiredSignatureError, InvalidTokenError
from datetime import datetime, timedelta, timezone


def handle_refresh_token(app):
    # Get the refresh token from cookies
    cookies = request.cookies
    if 'jwt' not in cookies:
        return jsonify({'error': 'Refresh token not found in cookies'}), 401

    refresh_token = cookies['jwt']

    # Find the user with the given refresh token in the collection
    found_user = users.find_one({'refreshToken': refresh_token})
    if not found_user:
        return jsonify({'error': 'User not found or invalid refresh token'}), 403

    try:
        # Verify the refresh token and extract username
        decoded = jwt.decode(refresh_token, app.config['REFRESH_TOKEN_SECRET'])
        email = decoded['username']
    except ExpiredSignatureError:
        return jsonify({'error': 'Refresh token has expired'}), 403
    except InvalidTokenError:
        return jsonify({'error': 'Invalid refresh token'}), 403

    # Create new access token
    token = jwt.encode({
        'email': email,
        'exp': datetime.now(timezone.utc) + timedelta(minutes=10)  # Adjust the expiration time as needed
```

Coverage for **routes\user_routes.py**: 89%

27 statements | 24 run | 3 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
from flask import Blueprint, request, jsonify
from functools import wraps
from model.user import getProfile, update_user_profile
from services.token_service import verify_token

user_routes = Blueprint('user_routes', __name__)

def token_required(f):
    @wraps(f)
    def decorated(*args, **kwargs):
        token = request.headers.get('Authorization')

        if not token or not token.startswith('Bearer '):
            return jsonify(message='Unauthorized'), 401

        token = token.split(' ')[1]

        decoded_token = verify_token(token)
        if not decoded_token:
            return jsonify(message='Invalid or expired token'), 403

        # Attach token payload to request object for easy access in route functions
        request.email = decoded_token.get('email')
        request.role = decoded_token.get('role')

        return f(*args, **kwargs)

    return decorated


@user_routes.route("/Profile", methods=['GET'])
@token_required
def profile_route():

```

Coverage for **tests\test_auth.py**: 100%

111 statements | 111 run | 0 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
from flask import Flask, jsonify, make_response, request
import flask
import jwt
from backend.config import users  # Import the MongoDB collection and bcrypt instance
from backend.services.token_service import generate_access_token, generate_refresh_token, verify_refresh_token
from flask_bcrypt import Bcrypt
from unittest.mock import MagicMock, patch
import pytest
import sys
sys.path.append('C:\\Users\\Shamma\\Desktop\\UrbanKey-2\\backend')
from app import app
from backend.model.auth import signup, signin, refreshToken, handle_logout
from backend.model.handleRefresh import handle_refresh_token
from backend.model.user import getProfile, update_user_profile
from unittest.mock import MagicMock, patch
from mongomock import MongoClient

# commands to run tests: pytest --cov=. tests/ --cov-report xml:cov.xml

# Create a mock MongoDB collection
mongo_client_mock = MagicMock()

bcrypt_mock = MagicMock(return_value='test_password')

# Create a mock bcrypt instance
bcrypt = Bcrypt()

# Mock the Flask application and configuration
app = Flask(__name__)
app.config['SECRET_KEY'] = '0622d0d552f33f6309180901'
app.config['REFRESH_TOKEN_SECRET'] = '062444442d0d554442f33f63091804444901'

# Apply the configuration to the app
app.testing = True
```

Figure 8

New test files and cases, specifically "test_reservations.py", "test_reservationsCompany.py", and "test_user.py", have been created and implemented to enhance backend testing. These additions complement our existing suite of tests. As a result, we have achieved an 85% coverage rate for our `app.py`, demonstrating the effectiveness of our testing efforts.

Link to Github Backend Testing (Test Cases):

- For “test_reservations.py”, “test_finance.py” and “test_user.py” files: https://github.com/Tanya-STY/UrbanKey/tree/main/backend/tests

- For “test_todo.py” and “test_auth.py” files: https://github.com/Tanya-STY/UrbanKey/tree/backend-testing/backend/tests

Complete Retrospective

Short Sprint #1 Retrospective

Crafting Excellence

Key Takeaways from Our Project Postmortem

Introduction

As we wrap up our first sprint, it's imperative to reflect on our progress, achievements, and areas for improvement. This postmortem offers a comprehensive evaluation of our accomplishments, covering key aspects like product vision, software architecture, risk management, prototype development, testing, retrospective analysis, and planning for the upcoming sprint. Each component plays a crucial role in shaping our project's success, and through this review, we seek valuable insights to refine our processes and deliver an exceptional product.

We began by formulating user stories tailored to the product owner's requirements, laying the groundwork for our development process. These stories guided the creation of activity and use-case diagrams, providing a structured blueprint for our work. With a clear understanding of the project's scope, we proceeded to build essential architectural elements, including the domain model, class diagram, component diagram, and deployment diagram, ensuring a robust framework for our webpage. Concurrently, the development team focused on implementing the initial functionalities of our product, beginning with startup pages such as Login, Sign Up, and User Profile. Through collaborative efforts and meticulous attention to detail, we laid a solid foundation for the subsequent stages of development.

Additionally, amidst our sprint activities, we recognized the importance of integrating efficient project management tools, such as an Enterprise Resource Planning (ERP) system. This system will streamline our processes, enhance communication, and facilitate resource allocation, ultimately contributing to the success of our project. As we reflect on our progress and plan for the upcoming sprint, the implementation of an ERP system will further strengthen our project management framework, ensuring seamless coordination and optimal utilization of resources.

Going into the first sprint, there was a degree of uncertainty regarding our ability to cover all requirements and complete all deliverables within the designated timeframe. Despite this initial uncertainty, we are pleased with the progress achieved thus far. Through diligent teamwork and focused efforts, we have made significant strides in laying the foundation for our project. While challenges may have arisen along the way, our determination and commitment have enabled us to overcome obstacles and move forward with confidence.

What went wrong

1 - Building the Domain Model

During the initial stages of constructing the domain model, our team encountered uncertainties stemming from the diverse and sometimes overlapping requirements laid out for the project. These complexities presented a challenge as we grappled with how best to structure the domain model to accurately reflect the intricacies of the project. The sheer variety of requirements from different stakeholders added to the complexity, making it difficult to establish a cohesive framework.

To address these challenges, we convened team meetings aimed at dissecting each requirement and organizing them systematically. Through collaborative discussions and brainstorming sessions, we were able to identify common themes and patterns, which facilitated the segmentation of requirements into manageable components. This approach allowed us to break down the complexities of the project into more digestible units, enabling us to create a domain model that aligned more closely with the project's objectives. By leveraging the collective expertise and insights of the team, we were able to navigate through the uncertainties and establish a solid foundation for the domain model.

2 - Limited Time

Another challenge we faced during the initial phase of the project was the limited time available to fully comprehend the problem and grasp the intricacies of the project description. With deadlines looming and a complex project to unravel, there was a sense of urgency to gain a thorough understanding of the requirements. The time constraints added pressure to the team, making it challenging to delve deeply into each aspect of the project and formulate a comprehensive strategy.

To mitigate this challenge, we adopted a proactive approach by scheduling numerous team meetings dedicated to discussing the project in detail. These meetings served as invaluable platforms for sharing insights, clarifying doubts, and collectively brainstorming solutions. Additionally, we made frequent use of available resources, such as reaching out to the Teaching Assistant (TA) for clarification on ambiguous points and seeking guidance whenever needed. By leveraging these resources and fostering open communication within the team, we were able to overcome the hurdle of limited time and gain a better understanding of the project requirements.

3 - Difficulty in envisioning the website's functionality

Another challenge we encountered was the difficulty in envisioning the website's functionality, particularly in the nascent stages of the project. With only preliminary requirements and a rudimentary understanding of the project scope, it was challenging to visualize the website's intricate functionalities and user experience. This lack of clarity posed a significant obstacle, as it hindered our ability to conceptualize and plan for the development of the website effectively.

To address this challenge, we organized brainstorming sessions to generate ideas and perspectives on desired features and user interactions. Additionally, we utilized wireframing and prototyping tools to create visual representations of the website's functionalities and interfaces. These activities enabled us to overcome the initial difficulty in envisioning the website's functionality and gain a clearer understanding of the project's direction.

Through iterative refinement and continuous feedback, we laid the groundwork for developing a cohesive and user-friendly website.

What went right

1 - Meetings and Communication

One aspect that worked exceptionally well within our team was the ease of setting up meetings and fostering effective communication. We found that scheduling meetings was straightforward, and the majority, if not all, of our teammates consistently attended. This ensured that important discussions and decision-making processes involved active participation from all team members, promoting collaboration and synergy.

Furthermore, our team excelled in maintaining open and transparent communication channels. Whether through regular meetings, or instant messaging platforms, we found it easy to share updates, discuss ideas, and address any concerns promptly. This seamless communication facilitated smooth coordination among team members, allowing us to stay aligned with project goals and make informed decisions collectively. Overall, the ease of setting up meetings and effective communication played a pivotal role in enhancing team cohesion and productivity throughout the project.

2 - Splitting the workload

An advantageous aspect of our teamwork was our commitment to evenly distributing the workload among team members. Recognizing the diverse commitments and responsibilities of each member, we made a concerted effort to allocate tasks in a balanced manner. This allowed every team member the flexibility to work on their assigned parts at their own pace and convenience, accommodating their schedules and other academic obligations effectively.

By ensuring an equitable distribution of tasks, we fostered an environment where each team member could contribute meaningfully while managing their time efficiently. This approach not only promoted autonomy and ownership over individual responsibilities but also encouraged a sense of accountability within the team. As a result, team members were able to focus on their assigned tasks without feeling overwhelmed, thus maximizing productivity and facilitating a smoother workflow throughout the project duration.

3 - Setting short deadlines

One commendable practice within our team was our strategic approach to setting deadlines for individual tasks. Recognizing the importance of timely progress, we implemented a system where shorter deadlines were assigned to tasks requiring early completion. By setting deadlines a week or so prior to the end of the sprint for critical tasks, we ensured ample time for review, iteration, and addressing any unforeseen challenges. This proactive approach not only fostered a sense of urgency but also allowed us to stay on track and maintain momentum throughout the sprint.

This method of setting short deadlines proved highly effective in prioritizing tasks and allocating resources efficiently. It enabled us to focus our efforts on completing essential components of the project early on, laying

a solid foundation for subsequent tasks. Moreover, by breaking down the project into manageable milestones with clearly defined deadlines, we maintained a steady pace of progress and minimized the risk of last-minute rush or delays. Overall, this approach contributed to our team's productivity and success in achieving key objectives within the designated time frame.

Conclusion

As we conclude this phase of the project, it's crucial to acknowledge the valuable lessons learned and insights gained along the way. From navigating uncertainties to coordinating team efforts, each challenge has been met with resilience and effective problem-solving. By embracing challenges, leveraging strengths in communication and teamwork, and continuously refining processes, we've made significant progress towards our goals. Moving forward, it's essential to capitalize on successes, address any remaining weaknesses, and maintain our commitment to excellence. With a solid foundation laid, we're poised to tackle future endeavors with confidence and deliver a product that exceeds expectations.

Short Sprint #2 Retrospective

Crafting Excellence

Key Takeaways from Our Project Postmortem

Introduction

This postmortem reflects on the second sprint of our project, where our primary focus was on updating documentation and developing a functional webpage. Throughout this sprint, our objective was to work on both the front-end and back-end components of various pages within the project. Our initial expectation was to establish the basic structure of these elements, ensuring key functionalities were implemented without delving into intricate details by the sprint's end. However, the challenge arose as team members juggled commitments from other courses, which impacted our ability to fully realize this goal. Despite these constraints, we remained committed to delivering a functional webpage to the best of our abilities.

Despite facing time constraints due to other course commitments, our team dedicated their efforts to delivering a functioning webpage that we can take pride in. While we may not have achieved all the desired intricacies, we successfully implemented key elements across the front-end domain. Our collective dedication and hard work enabled us to overcome challenges and produce tangible results by the end of the sprint. Nonetheless, reflecting on this experience, we recognize the need to refine our time management strategies to optimize productivity in future sprints.

Moving forward, the lessons learned from this sprint will inform our approach to time management and project prioritization in the subsequent phases. We acknowledge the importance of effectively balancing commitments across various projects and courses to ensure consistent progress and quality deliverables. By leveraging these insights, we aim to enhance our team's efficiency and productivity in the upcoming sprint, ultimately driving us closer to achieving our project objectives.

What went wrong

1 - Managing the GitHub

During this sprint, as more team members delved into coding tasks, maintaining a streamlined workflow posed a slight challenge. Ensuring that every member initiated a new branch in the GitHub repository before submitting a pull request became particularly crucial. The increased activity necessitated a heightened focus on adherence to this process to prevent conflicts and maintain code integrity.

Efforts were directed towards reinforcing the practice of creating dedicated branches for individual tasks among team members. Clear communication and reminders were employed to underscore the importance of this step in the development cycle. Emphasizing the significance of branch management facilitated smoother collaboration and minimized disruptions, fostering a more efficient and organized development environment.

2 - Understanding Website Page Interaction

During this sprint, understanding website page interaction emerged as another notable challenge. Understanding the intricacies of how each page interconnected remained somewhat complex, impeding seamless navigation between different sections. Clarifying the pathways linking various pages and comprehending the navigation flow presented ongoing difficulties for the team.

Efforts were directed towards decoding the complexities of website page interaction. Collaborative discussions and exploratory exercises were employed to dissect the navigation structure and enhance comprehension. By delving into the intricacies of page linkage and navigation pathways, the team aimed to streamline user experience and mitigate any confusion surrounding website navigation during the sprint.

3 - Achieving Visual Consistency

Maintaining visual consistency across the website posed a challenge as each team member tackled different front-end pages during the sprint. Adherence to a unified design language became important to ensure a cohesive user experience. To address this, the team implemented a strategy of closely adhering to the prototype established the previous sprint. By precisely following the prototype's specifications, discrepancies in visual elements were minimized, fostering a more harmonious overall aesthetic.

Effective communication played a pivotal role in resolving any uncertainties that arose during the development process. Team members remained vigilant in seeking clarification whenever doubts surfaced, fostering a collaborative environment helpful to resolving issues promptly. Through this proactive approach and a dedicated commitment to the established design prototype, the team successfully mitigated challenges related to visual consistency across the website's front-end pages.

4 - Time Management

Time management emerged as a significant issue during the sprint, with certain team members unable to complete front-end development tasks promptly. This delay resulted in a cascading effect, impacting the availability of sufficient time for back-end developers to integrate their components effectively. The lack of synchronization between front-end and back-end development phases hindered the seamless progression of the project, highlighting the importance of better time allocation and coordination among team members.

The delay in front-end development ultimately underscored the need for a more synchronized workflow and improved communication channels within the team. Going forward, strategies such as setting clearer deadlines, implementing regular progress check-ins, and fostering proactive collaboration will be essential to ensure a more streamlined development process and mitigate similar time management challenges in future sprints.

What went right

1 - Documentation

One major success during this sprint was the quick and easy completion of documentation tasks. The majority of the documentation was straightforward to finalize due to the groundwork laid in the previous sprint. With a significant portion of the documentation already in place, the focus primarily shifted to updating specific sections, which were clearly outlined and discussed with the Teaching Assistant beforehand. This proactive approach ensured that the documentation process proceeded smoothly, saving valuable time and effort.

Clear communication with the TA proved instrumental in efficiently updating the documentation. Discussing the areas requiring updates in advance helped prioritize tasks and allocate resources effectively. By leveraging the existing documentation framework and proactively addressing necessary revisions, the team successfully navigated the documentation phase of the sprint, setting a positive tone for subsequent tasks.

2 - Front-End Development

The front-end development phase proceeded smoothly as each team member was assigned a specific page of the UrbanKey website to design. By distributing tasks in this manner, the workload was evenly distributed, ensuring a balanced approach to development. Team members were able to focus their efforts on their designated pages, streamlining the design process and enhancing efficiency.

Following the previously established UI prototype facilitated cohesive and consistent development across all pages. With a clear guideline in place, team members could easily align their designs with the established aesthetic, minimizing deviations and promoting visual coherence throughout the website. This approach enabled seamless integration of individual page designs into the overall website framework, contributing to the success of the front-end development phase.

Conclusion

In conclusion, the sprint presented a series of challenges and successes, each contributing to the overall progress of the project. Challenges such as maintaining visual consistency and understanding website page interaction were effectively addressed through strategies such as adhering to prototypes and fostering clear communication. Meanwhile, successes such as streamlined documentation completion and efficient front-end development highlighted the team's ability to leverage pre-established frameworks and distribute tasks effectively. By navigating these hurdles and capitalizing on opportunities for collaboration and adherence to established processes, the team successfully advanced the UrbanKey project, setting a solid foundation for future sprints and project milestones.

Short Sprint #3 Retrospective

Crafting Excellence

Key Takeaways from Our Project Postmortem

Introduction

In this sprint retrospective, our primary objective was to advance the development of our website by refining both front-end and back-end components. With the overarching goal of achieving an almost fully functioning website by the sprint's end, our efforts centered on seamlessly merging all front-end pages and integrating essential navigation bars. This sprint proved pivotal in bridging the gap between design and functionality as we diligently connected all elements cohesively, moving closer to our project milestones.

While we experienced minimal changes in diagrams and documentation, allowing for focused attention on pressing tasks, challenges emerged that required our attention. Inequitable task division, task interdependence, and difficulties understanding webpage interaction were notable hurdles. Task allocation disparities led to some team members bearing heavier workloads, exacerbating the challenges posed by interdependent tasks. Additionally, grappling with the intricacies of webpage interaction hindered the cohesion of our development efforts. These challenges highlighted the importance of addressing task distribution and deepening our understanding of project dynamics to enhance future performance.

What went wrong

1 - Understanding Website Page Interaction

During this sprint, our team encountered the challenge of comprehending the interactivity between each webpage. While we had previously worked on front-end components in the last sprint, this time, our focus shifted to merging all pages together.

To address this issue, we convened to dissect the purpose and functionality of each page, identifying their connections and interactions with one another. This collaborative approach helped us gain clarity on the navigation flow and streamline the integration process for a more cohesive website structure.

2 - Task Interdependence

Interdependence among tasks emerged as a significant challenge during this sprint, leading to unfair time constraints for certain team members. Some tasks were contingent upon the completion of others, leaving those with limited time to complete their work feeling overwhelmed. To address this issue in the next sprint, we plan to implement shorter deadlines that allow all team members sufficient time to fulfill their responsibilities. This proactive approach aims to alleviate time pressure and ensure equitable distribution of workload across the team.

Recognizing the impact of task interdependence on individual workload, we acknowledge the importance of setting realistic deadlines to accommodate the sequential nature of tasks. By establishing shorter, more manageable deadlines for each phase of the project, we can mitigate the risk of undue stress and promote a more

balanced workflow. Moving forward, fostering greater awareness of task dependencies and implementing timely deadlines will be essential to optimizing team productivity and fostering a collaborative work environment.

3 - Task Division

Addressing the challenge of task division proved essential during this sprint, as disparities arose in the workload distribution among team members. While some faced a multitude of complex tasks, others encountered fewer and simpler assignments.

To rectify this issue moving forward, we plan to convene another meeting to ensure a more equitable distribution of work for subsequent sprints. By fostering open communication and collectively strategizing task allocation, we aim to promote fairness and optimize productivity within the team.

What went right

1 - Documentation and Diagrams

One notable success in this sprint was the minimal need for updates to diagrams and documentation. This allowed team members to redirect their focus towards more time-consuming tasks without the burden of extensive revisions. With these foundational elements largely unchanged, valuable time and resources were freed up, enabling team members to dedicate their efforts towards completing other critical tasks within the project.

This efficiency in documentation management served to optimize workflow and maximize productivity throughout the sprint, highlighting the benefits of thorough planning and execution in project management.

2 - Communication

Another success in this sprint was the efficient communication among all team members whenever problems arose. Utilizing Discord as our primary communication platform, we promptly addressed issues and coordinated solutions. Whether through direct messaging or planning quick meetings, our team ensured that communication remained open and effective, fostering a collaborative environment conducive to problem-solving and progress.

This proactive approach to communication allowed us to swiftly address challenges and maintain momentum throughout the sprint. By promptly sharing updates and coordinating responses, we mitigated potential setbacks and kept our project on track. Moving forward, we recognize the importance of maintaining this level of communication to navigate future obstacles effectively and achieve our project objectives.

Conclusion

In this sprint retrospective, we encountered a blend of challenges and successes that provided valuable insights into our project's progress. While we made significant strides in advancing the development of our website, challenges such as understanding webpage interaction, inequitable task division, and task interdependence underscored the importance of refining our project management strategies. However, amidst these challenges, notable successes emerged, including minimal changes in documentation and diagrams, as well as efficient communication among team members.

Moving forward, we are committed to addressing the challenges identified during this sprint by implementing strategies to improve task distribution, deepen our understanding of project dynamics, and enhance communication channels. By leveraging the lessons learned and building upon our successes, we are confident in our ability to overcome obstacles and continue making meaningful progress towards achieving our project goals in future sprints.

Short Sprint #4 Retrospective

Crafting Excellence

Key Takeaways from Our Project Postmortem

Introduction

In this sprint retrospective, we reflect on the successes and challenges encountered as we navigated through our latest development cycle. One notable achievement was the seamless integration of front-end and back-end tasks, facilitated by proactive role adjustments within our team. By addressing communication gaps between developers, we optimized resource utilization and fostered a more cohesive workflow. This strategic realignment not only enhanced collaboration but also allowed us to capitalize on the skills and expertise of our team members more effectively.

Furthermore, this sprint highlighted the importance of structured deadlines in managing interdependent tasks. By setting clear timelines and priorities, we successfully mitigated bottlenecks and delays arising from concurrent development requirements. Additionally, we celebrated the stability and relevance of our existing documentation and diagrams, sparing valuable time and resources that would have been spent on extensive updates. Through equitable task distribution, we ensured that each team member had sufficient workload to contribute meaningfully to sprint objectives while maintaining a healthy balance with other commitments.

What went wrong

1 - Communication between Front-End and Back-End Developers

During this sprint, a notable challenge emerged due to communication gaps between our front-end and back-end developers. This resulted in inefficiencies and missed opportunities, particularly in terms of team allocation and resource utilization. Had communication been smoother, we could have seamlessly integrated more team members into the back-end tasks, enhancing our capacity to tackle the workload effectively. Recognizing the critical nature of streamlined communication, proactive measures were taken to address this issue promptly.

Consequently, to mitigate the impact of communication breakdowns, we implemented strategic changes within the team structure. Specifically, we realigned the roles of several individuals from front-end to back-end responsibilities. This adjustment not only facilitated better collaboration between the two teams but also optimized our workflow by leveraging the skills and expertise of team members more efficiently. Through these adaptations, we aim to foster a more cohesive and productive environment for future sprints.

2 - Task Interdependence

This sprint presented a challenge with numerous tasks interdependent on each other, particularly those requiring concurrent development of both front-end and back-end components for specific pages. This interdependence often led to bottlenecks and delays in completing tasks, hampering overall progress. To address this issue effectively, we implemented a structured approach by setting shorter deadlines within the team. Front-end developers were allocated a dedicated week to focus on their respective pages, enabling them to finalize their work efficiently. This timeframe allocation allowed back-end developers the remaining duration of the sprint to seamlessly integrate their components, resulting in smoother coordination and improved task completion.

By establishing these clear deadlines and task priorities, we aimed to streamline the development process and mitigate delays caused by interdependencies. This approach not only enhanced team efficiency but also fostered better communication and collaboration, ensuring that both front-end and back-end tasks could progress harmoniously within the sprint timeframe.

What went right

1 - Documentation and Diagrams

This sprint saw a notable achievement as the majority of our diagrams and documentation remained unchanged, reflecting the stability and accuracy of our initial planning and execution. This spared valuable time and resources that would have otherwise been allocated to extensive updates.

Additionally, a significant portion of our documentation remained relevant, indicating effective communication and alignment throughout the team. For the sections that did require updates, we implemented a strategic approach to ensure efficiency. Tasks were carefully divided among team members, allowing those responsible for updates to focus their efforts without excessive time investment. This approach ensured that necessary revisions were completed promptly, while minimizing disruptions to ongoing development tasks.

2 - Clear Task Separation

This sprint demonstrated effective task allocation, ensuring that workload distribution was equitable and manageable for all team members. Tasks were clearly delineated, allowing each member to have sufficient work to contribute meaningfully to sprint goals while balancing other commitments such as classes and projects.

This approach fostered a productive and sustainable work environment, where team members could efficiently fulfill their responsibilities without feeling overwhelmed or stretched thin. As a result, we were able to achieve our sprint objectives while also maintaining a healthy work-life balance for all involved.

Conclusion

In conclusion, this sprint retrospective emphasizes the value of effective communication, strategic planning, and equitable workload distribution in achieving our project goals. By addressing challenges head-on and implementing proactive measures, we have strengthened our team dynamics and enhanced our productivity. Moving forward, we will continue to prioritize clear communication, efficient task management, and

collaborative problem-solving to drive success in future sprints. With a shared commitment to continuous improvement and mutual support, we are well-positioned to tackle new challenges and achieve even greater milestones in the journeys ahead.

Short Sprint #5 Retrospective

Crafting Excellence

Key Takeaways from Our Project Postmortem

Introduction

In this sprint, our primary focus was on wrapping up the remaining tasks carried over from the previous cycle, ensuring that loose ends were tied and objectives were met. With a concerted effort, we directed our attention towards completing pending assignments, aiming for a seamless transition into the next phase of development. Additionally, we dedicated time and resources to adding the finishing touches to our project, refining and polishing our work to achieve the desired level of quality and completeness. This sprint underscored our commitment to thoroughness and attention to detail as we approached the final stages of our project.

Moreover, effective task allocation facilitated progress despite the challenge of concurrent final exams, as team members efficiently balanced project commitments with academic responsibilities. Furthermore, the abundance of completed tasks from previous sprints streamlined our workload, allowing for a more focused and less time-consuming sprint. However, navigating the sprint amidst final exams proved challenging, requiring diligent time management and prioritization to ensure project advancement alongside academic demands.

What went wrong

1 - Time Constraints

This sprint presented a notable challenge as the timing coincided with final exams for all team members, making it difficult to allocate dedicated time to project work. With the majority of our attention focused on academic commitments during the peak of finals weeks, finding opportunities to progress on the project proved to be a significant hurdle. However, despite these constraints, we remained resilient and committed to advancing the project whenever possible, leveraging breaks from studying and post-exam periods to contribute to our sprint objectives.

Despite the formidable obstacle of final exams consuming the majority of our time and energy, we persevered in carving out moments to push the project forward. Balancing the demands of academic responsibilities with project commitments required careful planning and discipline. Yet, through effective time management and prioritization, we were able to make meaningful progress on our tasks, demonstrating our dedication to the project's success.

What went right

1 - Minimal Work Left

This sprint brought a welcome relief as the majority of our tasks were carryovers from previous sprints, consisting mainly of smaller, wrap-up assignments. With the bulk of our project work already completed in earlier phases, this sprint demanded less time and resources compared to its predecessors. This allowed us to focus our efforts on finalizing and refining existing features, resulting in a more streamlined and efficient workflow.

The abundance of completed tasks from previous sprints offered a silver lining amidst other challenges, making this sprint notably less time-consuming and demanding. With fewer major milestones to achieve, we had the opportunity to delve deeper into fine-tuning our project and addressing any remaining loose ends. This enabled us to allocate our resources more effectively, maximizing productivity and inching closer towards project completion.

2 - Efficient Task Division

This sprint saw effective task allocation, with a strategic division of responsibilities among team members. Those with remaining tasks from the previous sprint were assigned to wrap those up, ensuring continuity and closure on outstanding items. Meanwhile, team members who had completed their tasks in the prior sprint shifted their focus to diligently documenting the progress and outcomes of the current sprint. This systematic approach optimized our workflow, allowing for concurrent progress on multiple fronts while ensuring that all aspects of the project were addressed.

By aligning team members' assignments with their respective areas of expertise and ongoing responsibilities, we fostered a balanced workload distribution that facilitated efficient progress. This division of labor not only ensured that each task received the necessary attention and expertise but also promoted a sense of ownership and accountability within the team. As a result, we were able to navigate the sprint with clarity and purpose, ultimately achieving our objectives with cohesion and effectiveness.

Conclusion

In conclusion, this sprint retrospective highlights both successes and challenges encountered as we worked towards project completion. Despite the hurdles posed by concurrent final exams, effective task allocation and diligent time management allowed us to make significant progress. The strategic focus on wrapping up remaining tasks and adding finishing touches underscored our commitment to thoroughness and quality. Moving forward, we will continue to leverage our learnings from this sprint, emphasizing clear communication, balanced workload distribution, and adaptability to overcome obstacles and drive success in future endeavors. With a resilient spirit and collaborative effort, we remain poised to achieve our project goals and deliver exceptional results.

Overall Project Retrospective

Introduction

Throughout the course of our project, we embarked on a journey to deliver a comprehensive solution tailored to our users' needs. Divided into distinct user stories, our project roadmap was meticulously crafted, presenting both front-end and back-end tasks to be undertaken in each sprint. With our team separated into dedicated

front-end and back-end developers, each member was assigned specific responsibilities, fostering a streamlined workflow and efficient progress tracking.

However, amidst the pursuit of our project goals, several challenges emerged that tested our resolve and adaptability. One significant hurdle was the volume of tasks within constrained time frames, compounded by the responsibilities that team members juggled alongside this project. This complexity sometimes led to inequitable task distribution, particularly evident in two sprints where certain backend developers bore a disproportionately heavier workload. Additionally, time management posed a recurring challenge, as dependencies between front-end and back-end tasks necessitated precise coordination and timely completion.

Despite these challenges, notable successes emerged, driven by our team's commitment to communication and collaboration. Regular team meetings served as forums for discussion and troubleshooting, ensuring alignment and mutual support among members. Notably, the implementation of short internal deadlines proved efficient in facilitating seamless handoffs between front-end and back-end development phases. While this strategy exerted pressure on front-end developers to meet accelerated timelines, it ultimately enhanced our overall efficiency and cohesion, underscoring the efficacy of proactive project management strategies.

What went wrong

1 - Time Management

Time management emerged as a significant challenge for our project, largely due to the competing academic commitments of all team members. Balancing our project tasks with coursework and other responsibilities proved demanding, often leaving us with limited time to dedicate to project-related activities. Furthermore, the sheer volume of tasks, particularly within tight deadlines, magnified this issue, requiring careful prioritization and efficient utilization of available time.

To address these time constraints, our team chose to introduce shorter internal deadlines, primarily because frontend development had to be finished before backend work could commence for all webpages. While aimed at improving task efficiency, this decision unintentionally amplified time pressures for specific tasks. These compressed time frames heightened the urgency, posing a challenge in effectively managing our workload within the allotted time. Nevertheless, despite these obstacles, we persevered in our determination to overcome time constraints and make progress towards achieving our project goals.

2 - Inequitable Task Division in Some Sprints

Another challenge we encountered in the project was the inequitable task distribution, particularly noticeable in certain sprints where backend developers faced more complex and time-consuming tasks compared to their frontend counterparts. To address this issue, we took proactive measures by reallocating team members from the frontend to the backend team. This adjustment aimed to achieve a more balanced distribution of tasks across both teams, ensuring that workloads were divided more evenly and resources were utilized optimally.

By shifting personnel between teams, we aimed to rectify the disparity in task complexity and workload, fostering a fairer and more efficient working environment. This decision enabled us to leverage the diverse skill sets within our team and ensure that each member contributed effectively towards the project's success.

What went right

1 - Communication and Meetings

One aspect that thrived throughout the project was the communication within our team. Weekly meetings provided a platform for discussing task allocation and tracking each member's progress, ensuring everyone stayed on the same page. Additionally, utilizing Discord allowed us to reach out for assistance from fellow team members whenever necessary, fostering a collaborative atmosphere where support was readily available.

Furthermore, a standout feature was the active participation of every team member in our discussions. Each individual contributed insights, suggestions, and feedback, enriching our collective understanding and driving the project forward with a shared sense of ownership and commitment.

2 - Setting Short Deadlines

Another notable success in the project was the implementation of internal deadlines for each allocated task, ensuring timely completion before subsequent tasks could commence. While this approach did introduce some pressure, particularly for those with deadlines early in the sprint, it significantly improved workflow efficiency. By adhering to these deadlines, we ensured smooth progression through tasks and maintained the momentum necessary to deliver all sprint objectives on time.

Despite the initial challenges posed by the early deadlines for some team members, the overall impact of this approach was overwhelmingly positive. The structured timeline facilitated clear task handoffs between team members and enhanced coordination, resulting in a more seamless and productive workflow. Ultimately, the adherence to internal deadlines played a pivotal role in our ability to meet sprint deliverables promptly and effectively.

Conclusion

In conclusion, our project journey was a testament to the power of teamwork, resilience, and effective communication. While we encountered challenges such as time constraints and inequitable task distribution, we responded with proactive solutions and a commitment to supporting one another. The success of our project can be attributed to our dedication to clear communication, evidenced by our weekly meetings and active participation in team discussions. Additionally, the implementation of internal deadlines, though initially intimidating, significantly improved workflow efficiency and ensured timely delivery of sprint objectives.

As we reflect on our project experience, we recognize the valuable lessons learned and the growth achieved as a team. Each challenge we faced presented an opportunity for innovation and collaboration, ultimately contributing to our project's success. Moving forward, we will carry forward these lessons and continue to apply them in future projects, confident in our ability to overcome obstacles and achieve our goals together.

Lessons learnt

Throughout the course of this project, one invaluable lesson we learned as a team is that active communication and collaboration are indispensable keys to successful project completion. Despite encountering obstacles along the way, our unwavering commitment to open dialogue and teamwork enabled us to navigate challenges effectively. By consistently communicating our problems and supporting one another, we fostered a culture of

mutual assistance and problem-solving, ensuring that no team member faced difficulties alone. This experience reaffirmed the importance of communication and solidarity in achieving our collective goals and underscored the significance of a cohesive team dynamic in project success.

Sprint 5 Release Plan

In Sprint 5 of the Condo Management System, our strategic direction is to enhance operational efficiency and user responsiveness through the introduction of sophisticated request management functionalities and further refinement of user interaction features. This sprint will focus on four main user stories, covering a breadth of functionalities from issue reporting by condo owners to advanced request handling by property managers. More specifically, 4 Sub User Stories were pushed from Sprint 4 to Sprint 5, those being 18.2, 19.1, 19.2 and 20.1. In addition to that, there are 5 general tasks that need to be completed, being the improvement of the front-end of the web app, the completeness of the backend testing, the deployment of the backend, the responsiveness of the website and the final documentation.

The primary objectives for this sprint include implementing a streamlined process for condo owners to report common area issues, enabling these issues to be promptly addressed. We are also set to enhance the request categorization process, employing automation to ensure efficient assignment of requests based on their nature. Alongside automation, we will maintain flexibility through the capability for manual reassignment, ensuring requests are always handled by the most suitable personnel. Moreover, our commitment extends to improving communication with users; we plan to implement robust notification systems to keep users informed about the status of their requests, enhancing transparency and user satisfaction. These developments will be supported by critical tasks such as backend testing to ensure reliability, comprehensive documentation to track and assess project progress, and deployment activities to make these features readily available to our users. Our commitment to enhancing frontend usability and responsiveness remains strong, with significant efforts dedicated to ensuring the system's interface is intuitive and accessible on various devices. This sprint will also see us finalizing preparations for a seamless deployment of backend improvements, aiming for minimal disruption and maximum performance efficiency.

As we proceed with these enhancements, we anticipate a significant boost in the system’s functionality and user engagement. By the end of Sprint 5, we expect to deliver a complete, deployed and functional system that is not only more efficient in handling requests but also more engaging and user-friendly, ultimately supporting a cohesive and empowered condo community, and meeting all the necessary requirements for this project.

Release Plan Legend (on the Excel sheet):

User Story ID	User Story Points (USP)	Priority	Status
User Stories are from # 18 to # 20. The sub-user stories are in the format 2.1, 2.2, 3.1, etc.	The user story points are done based on the Fibonacci sequence.	• High • Medium • Low	• NOT STARTED • TO DO IN SPRINT 5 • DONE • PUSHED TO SPRINT 5 • REMOVED

There are a total of 43 story points for Sprint 5, and approximately 46 hours of work.

Link to the Release Plan Sprint 5 Excel file:
https://docs.google.com/spreadsheets/d/13q1o12V8uahZp1lSYp9ZLLlBz-c9Qpgi/edit?usp=sharing&ouid=112342122863028184816&rtpof=true&sd=true

UI Prototypes

Home Page

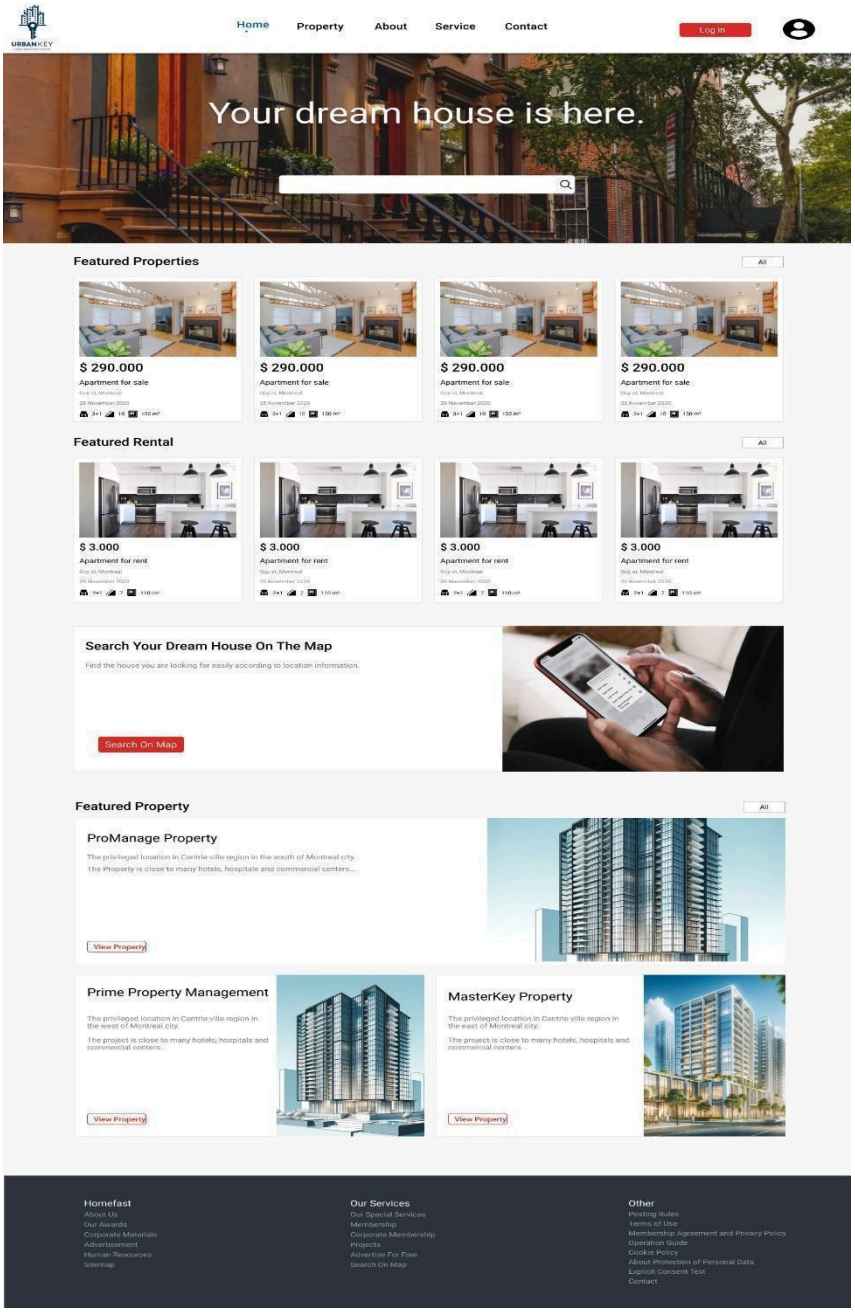


Figure 8

The homepage design for a real estate service features a sophisticated, user-centric interface. It includes an intuitive navigation bar, a striking banner for property searches, neatly organized listings of featured properties and rentals, and a map search functionality.

Login

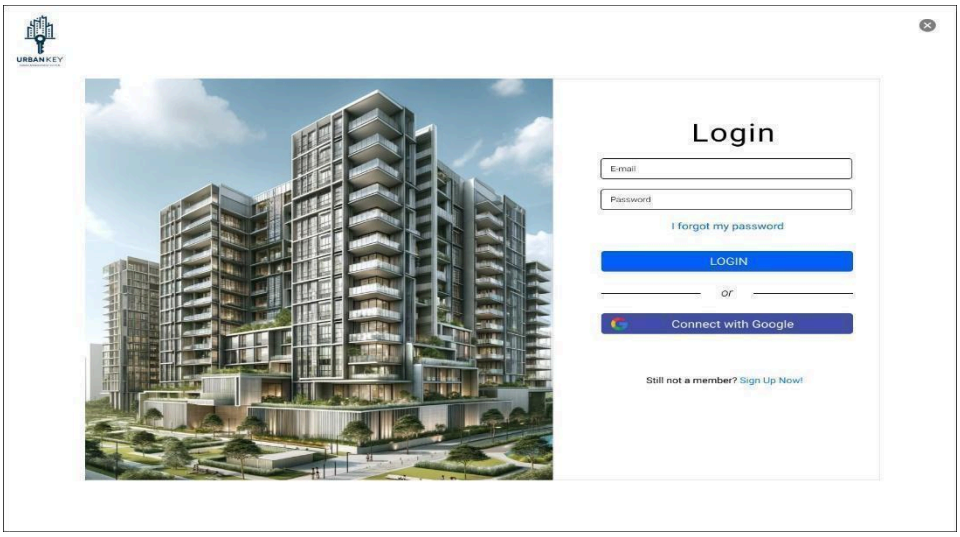


Figure 9

It offers users the choice to log in using their email and password or via Google. A link for those who have forgotten their password and a prompt to sign up for new members enhance the user experience with convenience and accessibility.

Sign Up

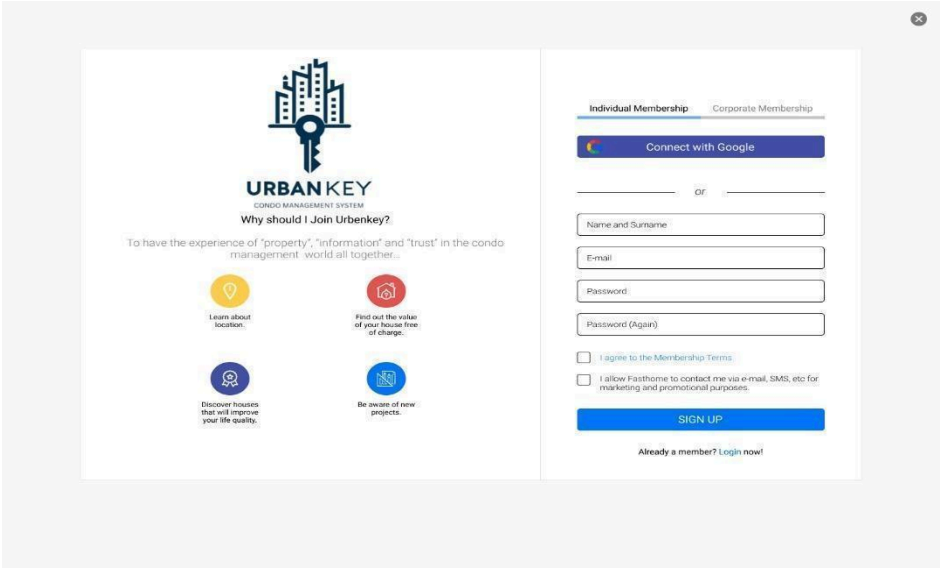


Figure 10

The form provides a choice between individual or corporate membership and the option to register with options for Google sign up, and clearly presents terms of service and promotional contact opt-ins, ensuring an informative yet streamlined user journey.

Property Page

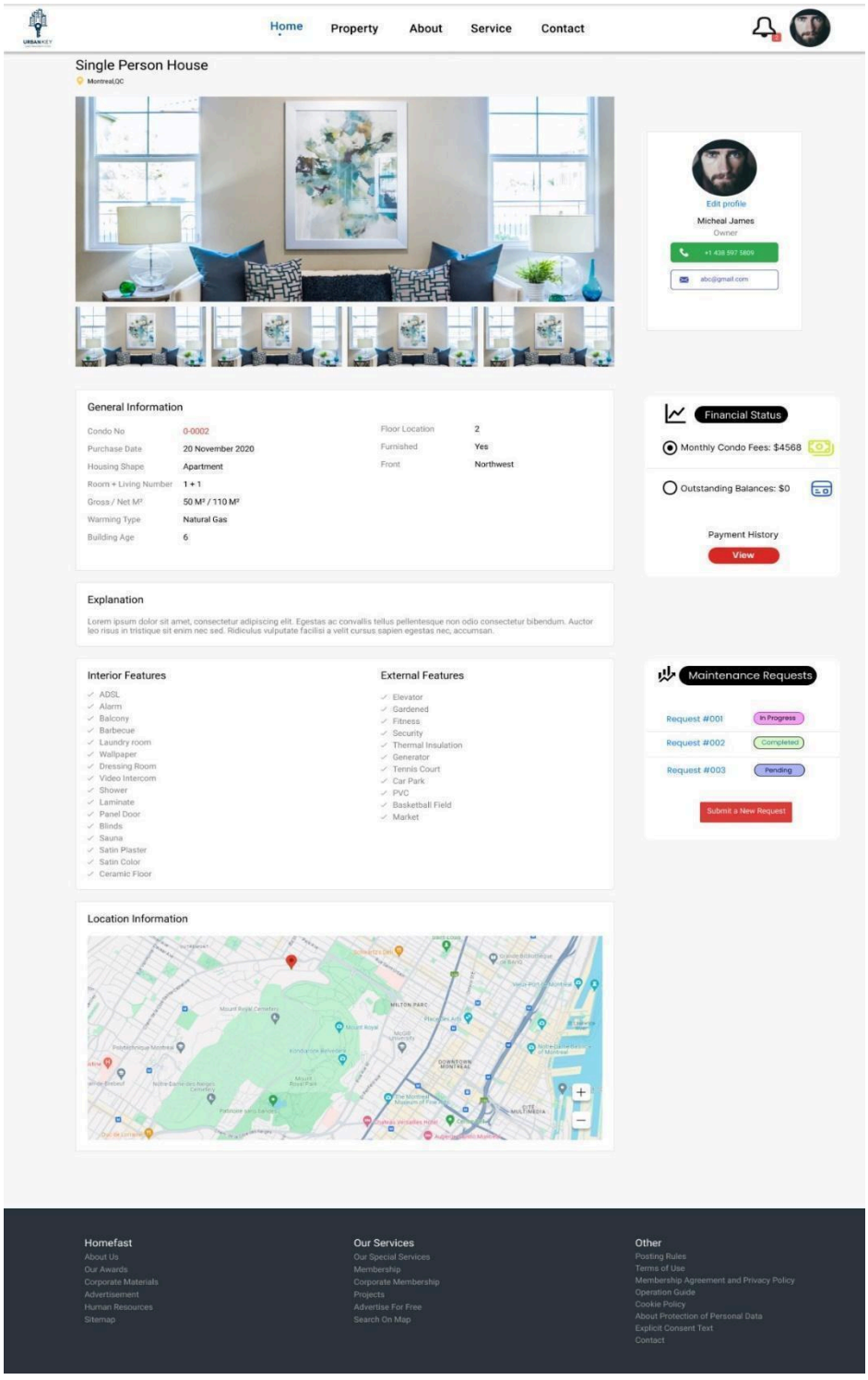


Figure 11

Notification

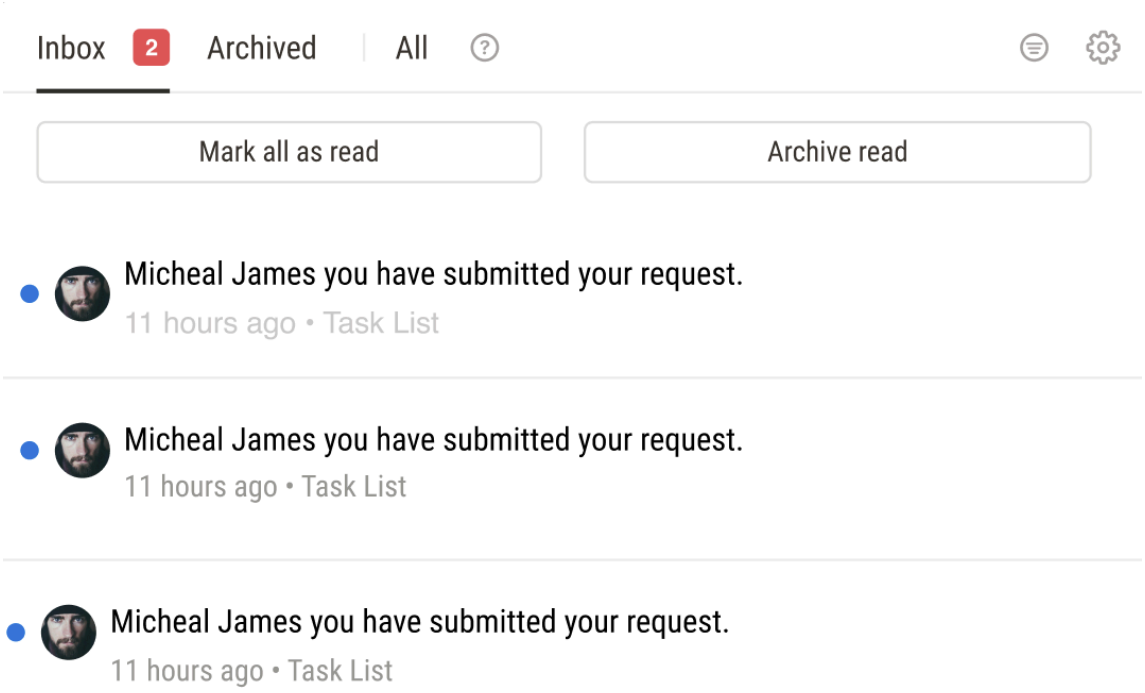


Figure 12

Payment

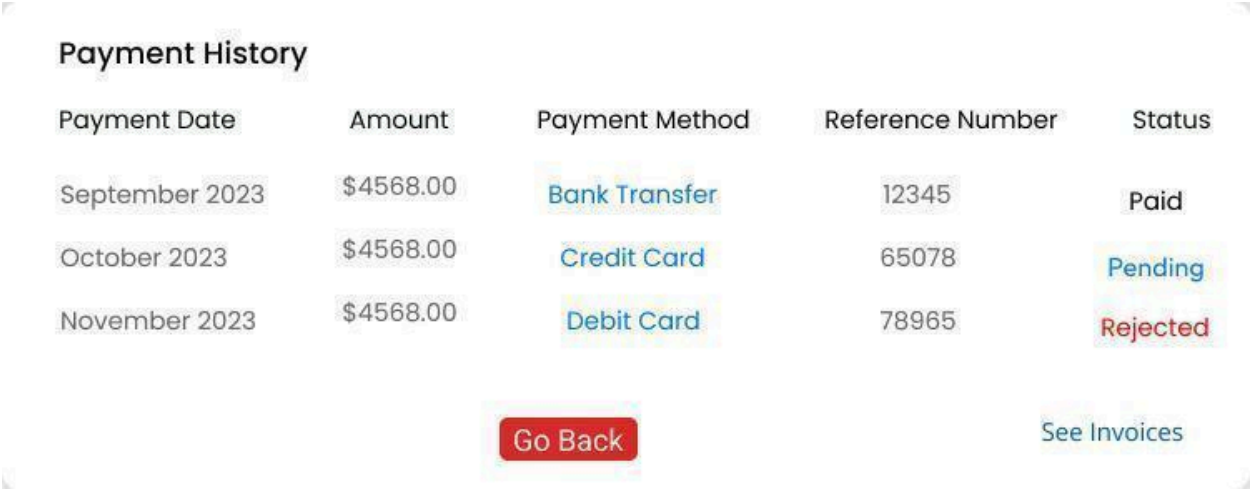


Figure 13

The property page layout is detailed, featuring a photo gallery, essential information about the property, and an interactive map. The design also includes sections for financial details for the user when they pay rent or mortgage and so on.

Maintenance Requests

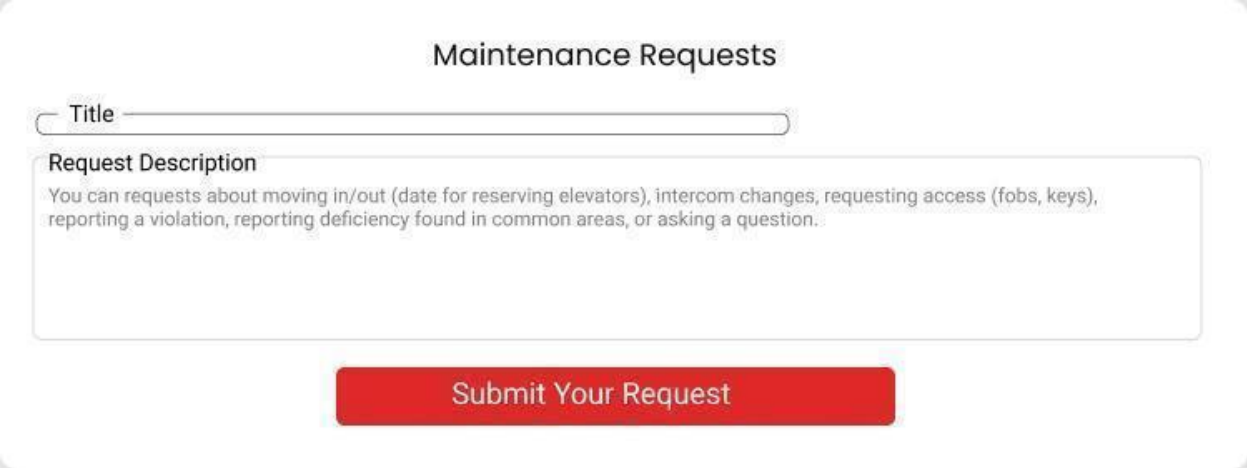


Figure 14

It encourages users to report issues or make requests related to property upkeep directly through the website.

Financial Management Dashboard

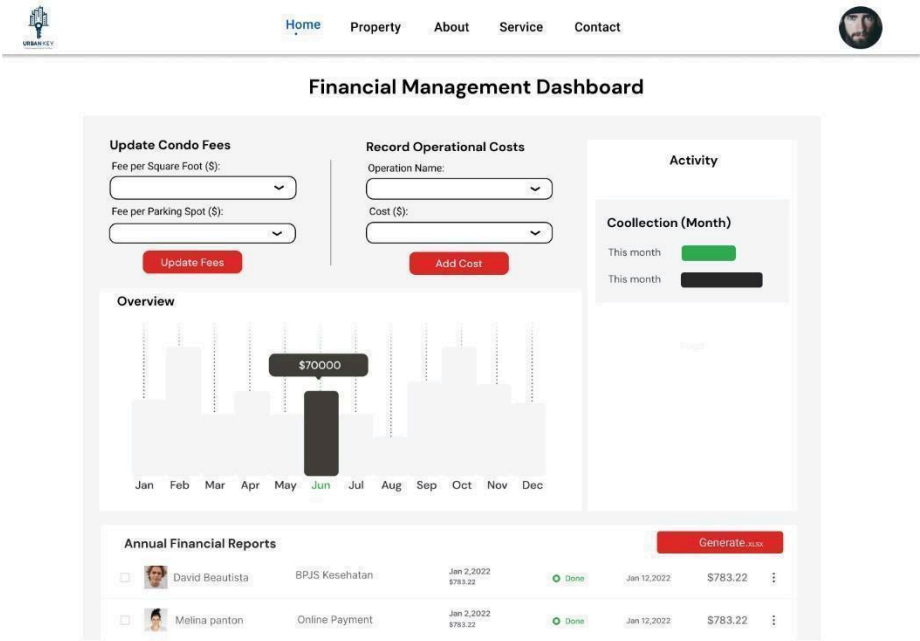


Figure 15

That allows updating of condo fees, recording operational costs, and provides an overview of financial activities, including a bar graph and a section to get annual financial reports.

Membership Information

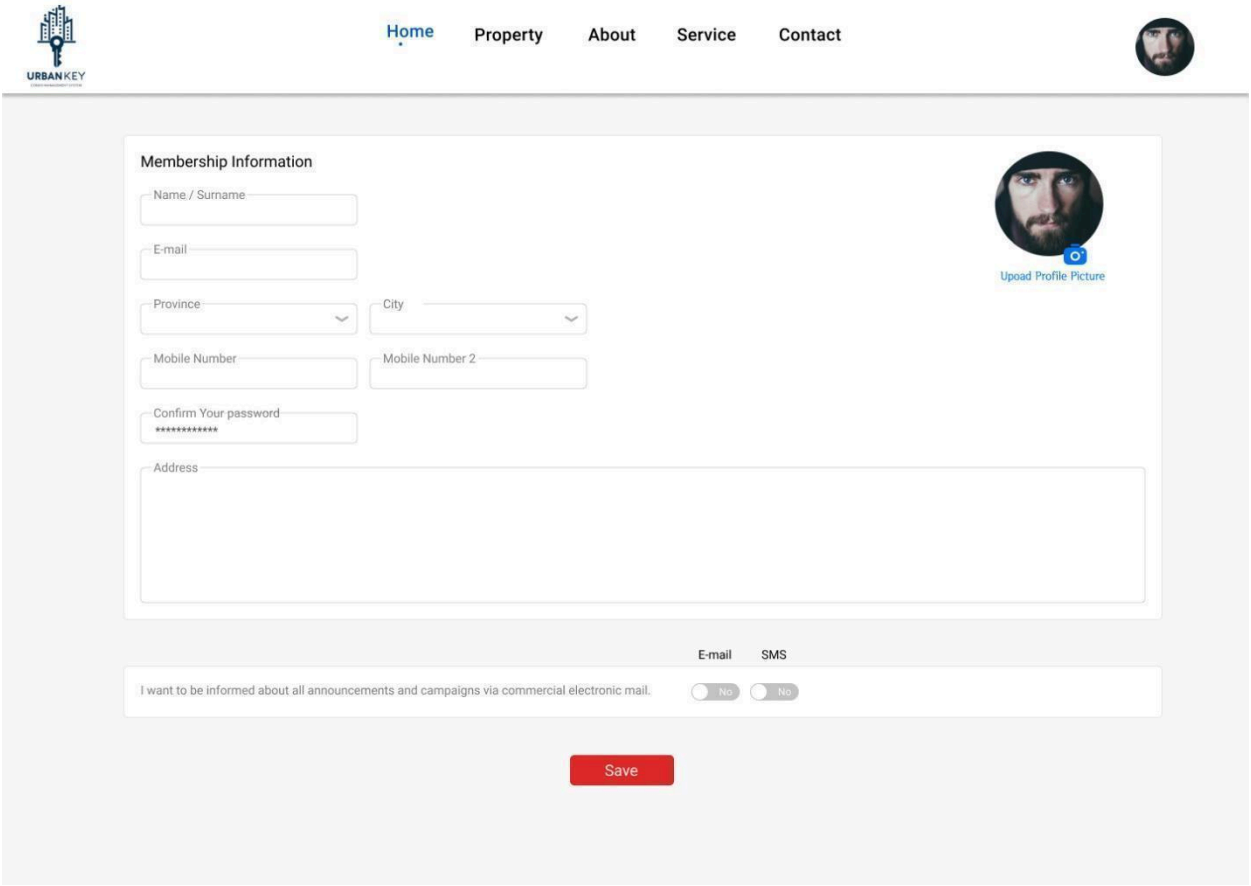


Figure 16

This allows users to manage their profile information, with fields for personal details, contact information, and preferences. It may also allow users to upload a profile picture and opt-in for notifications.

Property Profile Management

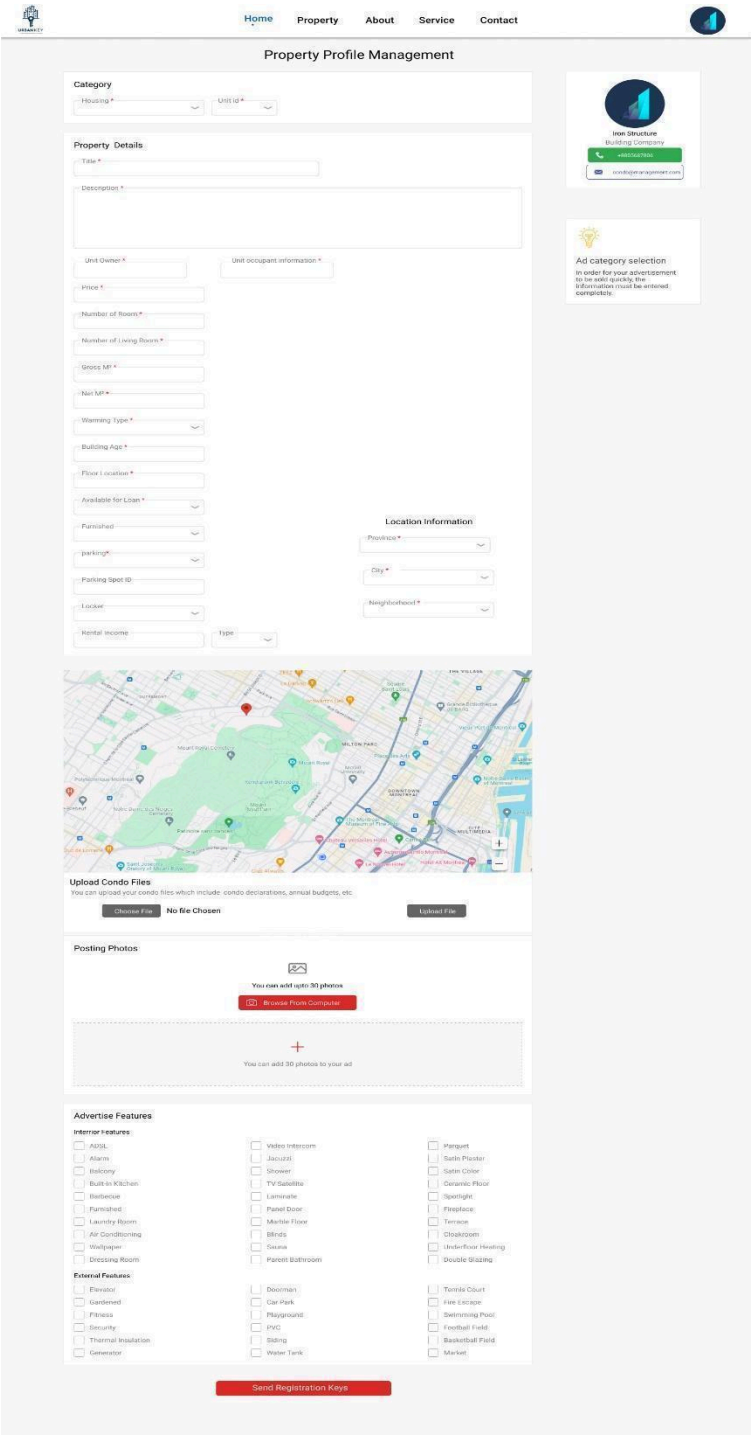


Figure 17

This allows property owners to enter details about their property for listing purposes. It includes sections for property features, location mapping, file uploads for important documents, and a photo gallery.

Reservation System

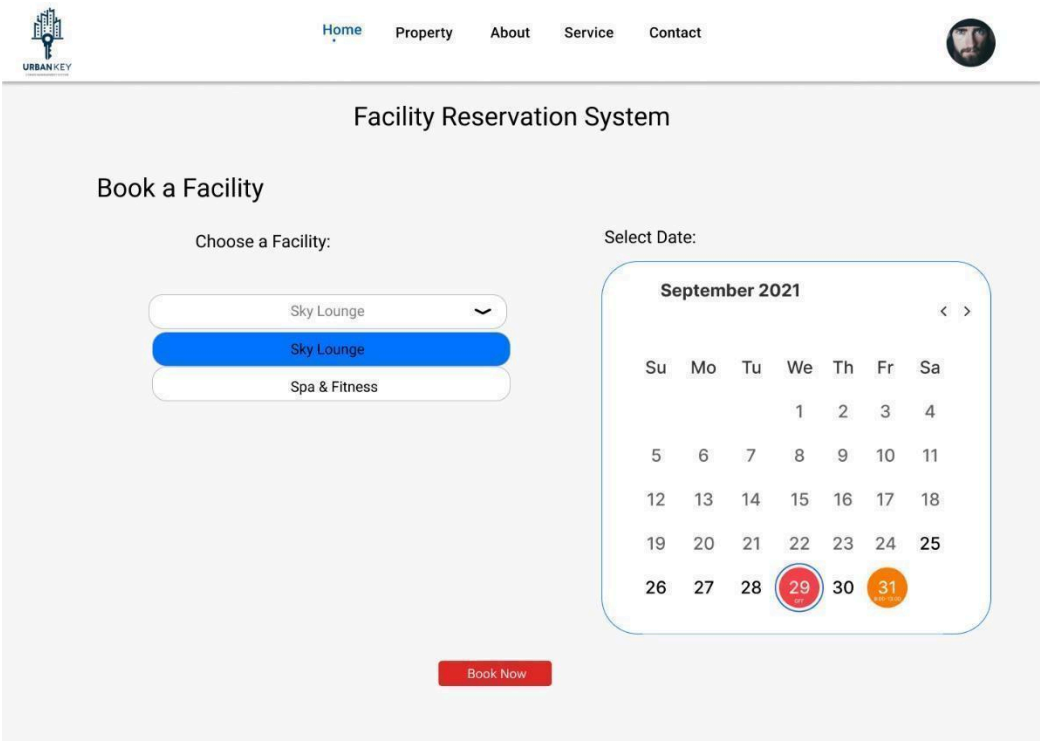


Figure 18

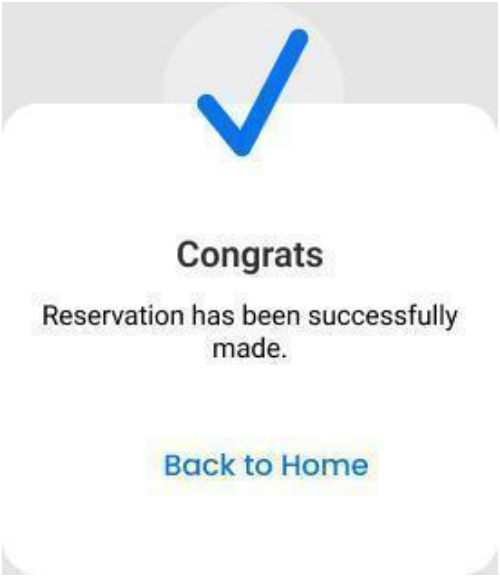


Figure 19

This is the facility booking system, where users can select from available facilities and dates, followed by a confirmation message indicating a successful reservation.

Employees

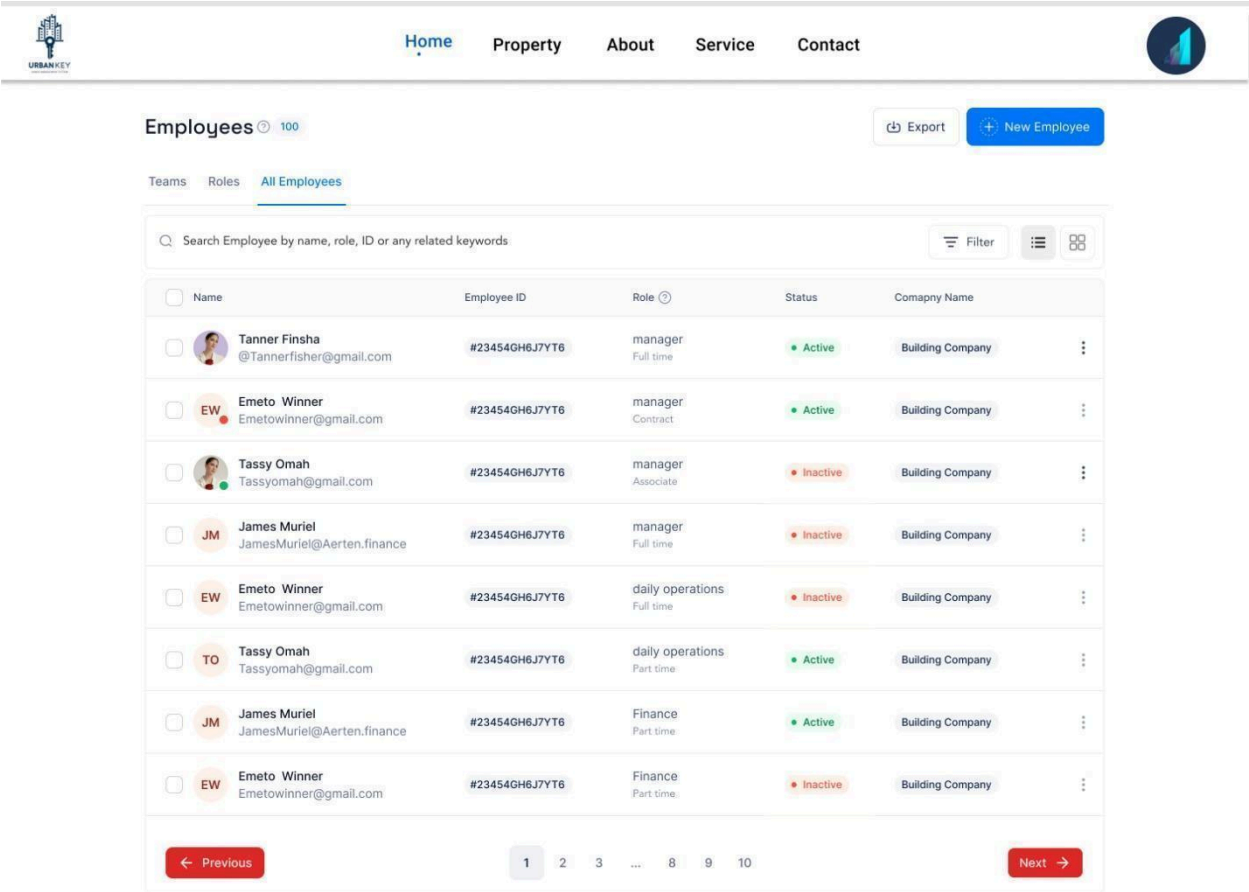


Figure 20

This is an employee management dashboard, listing employee details and providing functionality for filtering, searching, and managing employee records within a real estate or property management company.

Registration Key Page

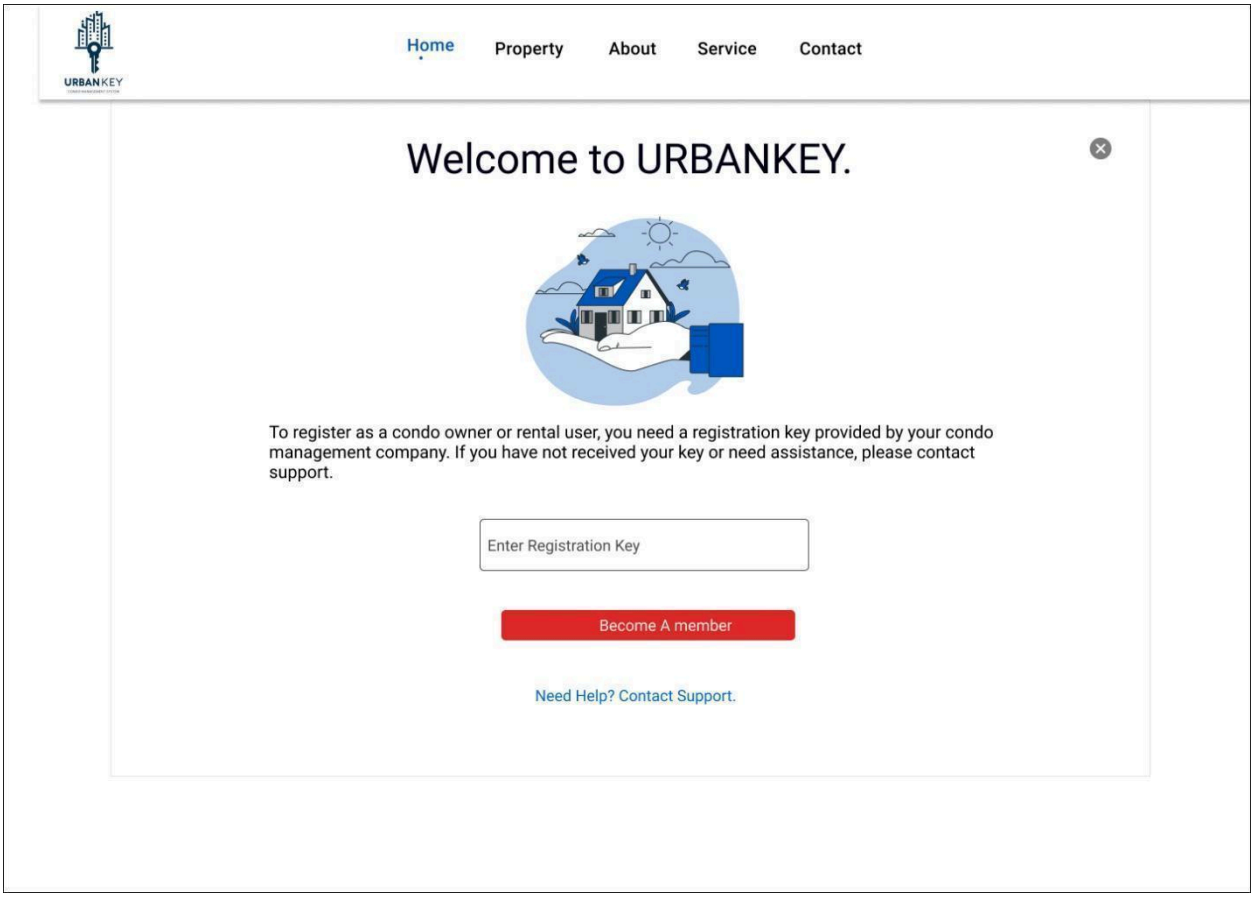


Figure 21

This is to prompt users to enter a registration key to gain access or to contact support for assistance.

Reservation Page for Condo Company

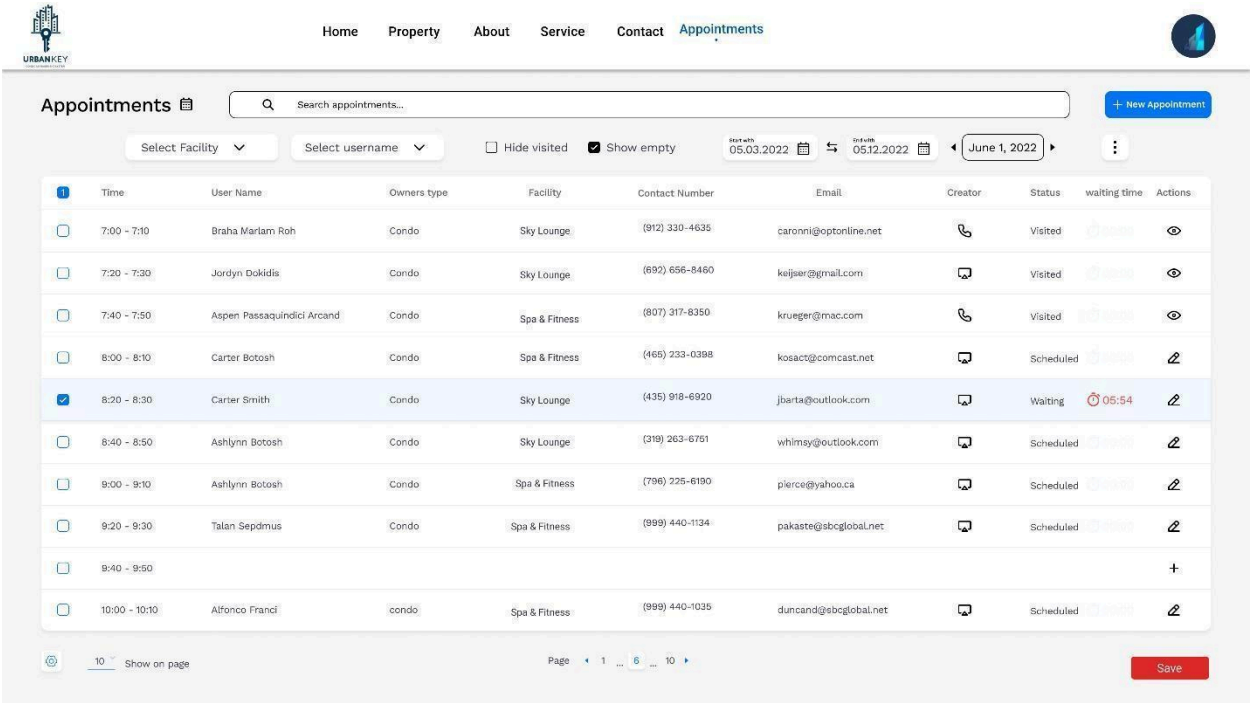


Figure 22

This interface displays all successful reservations made by condo owners. It features a table with reservation details including the user's email, the booked facility, and the selected date.

Manager Employee Page

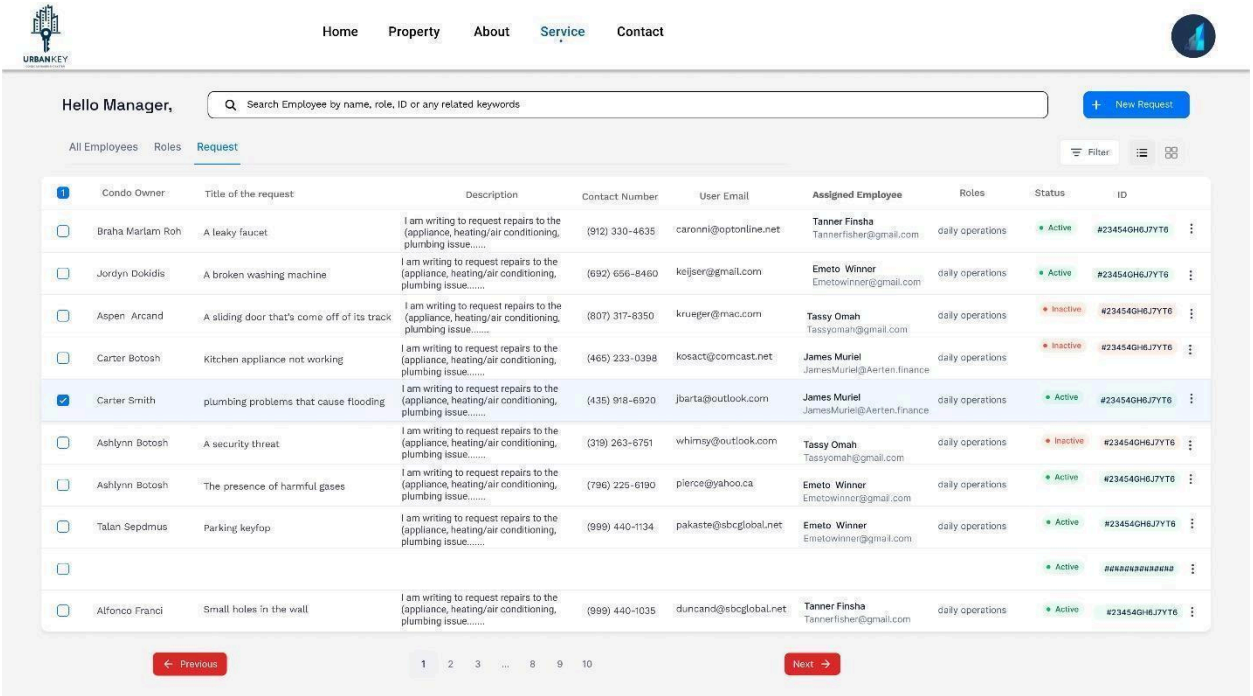


Figure 23

Allows a manager to assign daily operation tasks to employees.Shows owner names, request IDs, titles, descriptions, and request statuses.

Daily Operation Employee Page

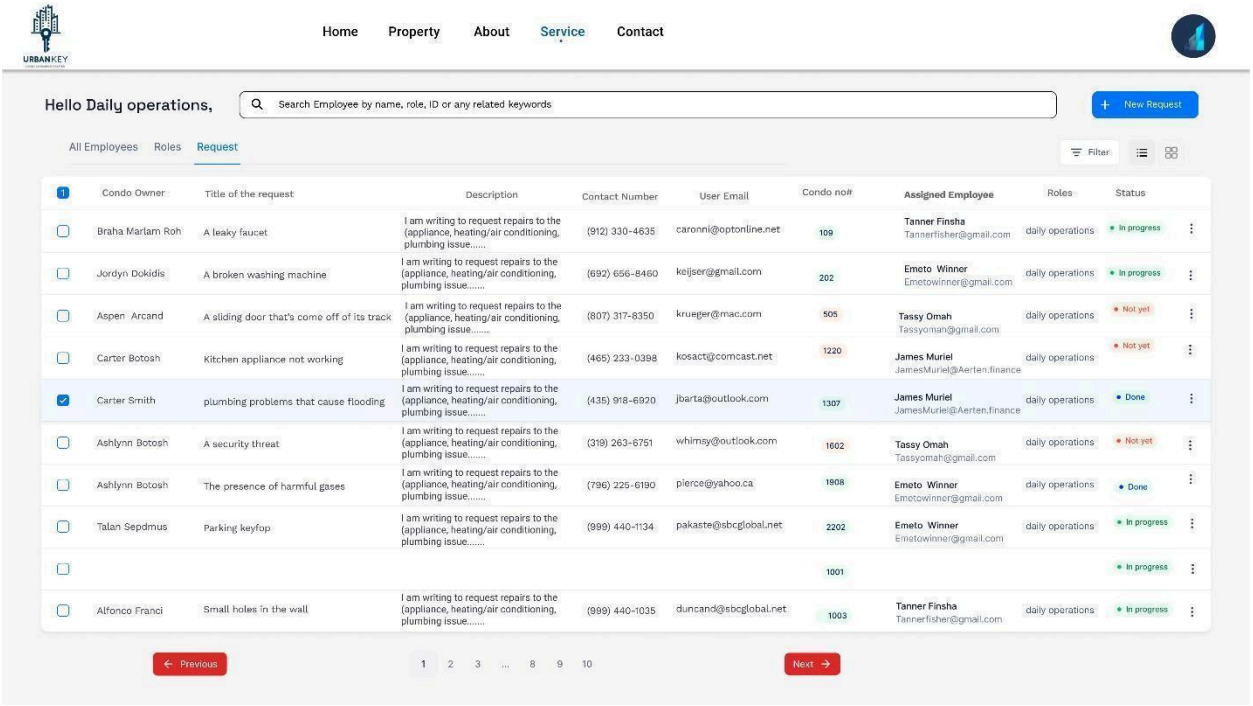


Figure 24

For daily operation employees to view and manage their assigned tasks. They can update the status of tasks, which reflects on both the manager's page and the condo owner's dashboard.

User Story Coverage Analysis

The Simplified Condo Management App is designed to facilitate the management of condos by providing a platform for public users, condo owners, rental users, and condo management companies to interact, manage properties, and access information. These functionalities are translated into user stories that describe the desired features from the perspective of the app's users. The aim is to ensure that the development efforts align with user needs and expectations, providing a clear and concise guide for the development team.

- Feature 1: Public User Profile Creation
    - User Story 1.1: Ensures public users can engage with the community, highlighting the app's social integration and personalization capabilities.

Registration and Verification

- Features 2 & 3: Registration Key for Ownership and Rental
    - User Stories 2.1 & 3.1: Address the need for a secure and verified entry into the system as either condo owners or rental users, emphasizing the app's focus on security and proper authorization.

Condo Owner Features

- Feature 4: Condo Owner Dashboard
    - User Story 4.1: Allows condo owners to have a comprehensive view of their properties, ensuring a seamless management experience.

Condo Management Company Features

- Features 5 to 7: Property Management
    - User Stories 5.1, 6.1, & 7.1: Cater to the operational needs of condo management companies, facilitating document management, detailed property information entry, and profile management.

Financial System Features

- Features 9 to 12: Financial Management
    - User Stories 9.1, 10.1, & 11.1: Emphasize the importance of a simplified yet detailed financial system within the app, supporting budget management and financial transparency.

Reservation System Features

- Features 13 to 16: Facility Reservation
    - User Story 13.1: Ensures users can efficiently plan and book common facilities, enhancing user convenience and facility utilization.

Role and Request Management Features

- Features 17 to 19: Role Assignment and Request Submission
    - User Stories 17.1 & 18.1: Focus on the administrative aspect of condo management, allowing for efficient role assignment and request handling.

Notification

- Feature 20: Notifications
    - User Story 20.1: Keeps users informed of activities related to their submissions or assignments, fostering an environment of transparency and responsiveness.

Navigation and User Interface

- Feature 21: Navigation and Navbar
    - User Story 21.1: Underlines the necessity of an intuitive and user-friendly interface, allowing for easy navigation throughout the app's features.

Status Update:

All Figma UI pages have been completed. We have successfully covered all aspects of the user interface design, ensuring comprehensive development coverage.

Sprint 3 Testing Report

Front-End Testing

Introduction:
Front-end testing is a crucial aspect of ensuring the reliability and functionality of web applications. In our Condo Management System Website project, we employed Jest, a widely used testing library compatible with React, to conduct front-end testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

Tools Used:
We employed Jest as our primary testing library due to its seamless integration with React. Jest offers a robust framework for creating and executing tests, making it an ideal choice for our front-end testing needs.

Testing Approach:
To organize our testing efforts, we established a dedicated folder named "Front-end Testing" within the src directory of our project repository. Within this folder, we created individual testing files corresponding to each front-end page of our website. Following the naming convention recommended by Jest, each testing file was named after its respective page, suffixed with .test.js.

For example, if a page in our application is named Employee.js, we created a corresponding test file named Employee.test.js. Within these test files, we crafted unit tests focusing on the key features and functionalities of each page. These tests were designed to verify the expected behavior of the front-end components and ensure that they operate as intended.

Upon completing the creation of test files for each front-end page, we executed the tests using the command “npm test” in the terminal. Additionally, to assess the code coverage achieved by our testing suite, we utilized the command “npm test -- --coverage”. This command generated detailed insights into the extent of code covered by our tests, allowing us to identify areas that require further testing or optimization.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our testing efforts. The following screenshots illustrate the code coverage metrics obtained from our front-end testing:

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	34.86	18.29	37.81	34.07	
Components/CondoOwnerDashboard	100	100	100	100	
OwnerDashboard.js	100	100	100	100	
Components/Employees	100	100	100	100	
Employee.js	100	100	100	100	
Components/FinanceDashboard	80	100	50	78.57	
Finance.js	80	100	50	78.57	15,21,69-102
Components/HomePage	100	100	100	100	
Home.js	100	100	100	100	
Components/LogIn	0	0	0	0	
Login.js	0	0	0	0	19-83
Components/NavBar	52.94	42.85	56.52	51.11	
NavBar.js	0	0	0	0	9-108
NavBar_Company.js	100	100	100	100	
NavBar_HomePage.js	100	100	100	100	
NavBar_User.js	91.66	100	83.33	90	20
Components/Popups	100	100	100	100	
MaintenanceRequest.js	100	100	100	100	
Notification.js	100	100	100	100	
PaymentHistory.js	100	100	100	100	
ReservationSuccess.js	100	100	100	100	
Components/ProfilePage	0	100	0	0	
Profile.js	0	100	0	0	14-180
Components/PropertyProfileManagement	60	0	50	66.66	
PropertyProfileManagement.js	60	0	50	66.66	17-21
Components/RegistrationKey	100	100	100	100	
RegistrationKey.js	100	100	100	100	
Components/Reservation	48.88	35	50	48.88	
Reservation.js	48.88	35	50	48.88	24-28,33,38,48-49,67-82,102
Components/SignUp	0	0	0	0	
SignUp.js	0	0	0	0	11-301
CustomeHooks	0	100	0	0	
useAuth.js	0	100	0	0	4-5

Test Suites: 8 failed, 10 passed, 18 total
Tests: 6 failed, 50 passed, 56 total
Snapshots: 0 total
Time: 22.631 s

Figure 25: Front-End Code Coverage

Back-End Testing

Introduction:
Backend testing is essential for ensuring the functionality, performance, and security of web applications. In our Condo Management System Website project, we employed Pytest, a powerful testing framework for Python, to conduct backend testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

Tools Used:
Pytest was selected as the primary testing framework for our backend testing needs. With its simplicity and flexibility, Pytest provides a comprehensive suite of features for writing and executing tests in Python applications, making it an ideal choice for our project.

Testing Approach:
To organize and streamline our backend testing efforts, we established a dedicated folder named "backend" within the project repository. Within this folder, we created individual testing files corresponding to different backend functionalities and pages of our website.

For instance, if a backend module is responsible for handling employee-related operations, we created a test file named test_employee.py within the backend folder. Following the conventions of Pytest, we crafted test functions within these files to validate the behavior of backend components and functionalities.

Our testing approach focused on covering various aspects of backend functionality, including data validation, business logic, API endpoints, and database interactions. Each test function was designed to verify specific scenarios and edge cases, ensuring comprehensive test coverage.

Upon completing the creation of test files and test functions, we executed the tests using Pytest's command-line interface. Pytest automatically discovered and executed the test cases within the backend folder, providing detailed feedback on test results and identifying any failures or errors encountered during testing.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our backend testing efforts. By integrating code coverage measurement into our testing workflow, we gained visibility into the percentage of code executed by our test suite and identified areas that require additional testing or optimization.

Coverage report: 90%

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Module	*statements*	*missing*	*excluded*	*coverage* ↓
__init__.py	0	0	0	100%
config.py	6	0	0	100%
model__init__.py	0	0	0	100%
model\handleRefresh.py	22	0	0	100%
routes__init__.py	0	0	0	100%
services__init__.py	0	0	0	100%
tests__init__.py	0	0	0	100%
tests\test_auth.py	111	0	0	100%
tests\test_tokens.py	0	0	0	100%
tests\test_todo.py	135	1	0	99%
model\user.py	36	4	0	89%
routes\user_routes.py	27	3	0	89%
app.py	20	3	0	85%
services\token_service.py	27	6	0	78%
routes\auth_routes.py	18	5	0	72%
model\auth.py	81	26	0	68%
Total	**483**	**48**	**0**	**90%**

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Figure 26: Back-End Code Coverage

Sprint 4 and Sprint 5 Testing Report

Front-End Testing

Introduction:
Front-end testing is a crucial aspect of ensuring the reliability and functionality of web applications. In our Condo Management System Website project, we employed Jest, a widely used testing library compatible with React, to conduct front-end testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

Tools Used:
We employed Jest as our primary testing library due to its seamless integration with React. Jest offers a robust framework for creating and executing tests, making it an ideal choice for our front-end testing needs.

Testing Approach:
To organize our testing efforts, we established a dedicated folder named "Front-end Testing" within the src directory of our project repository. Within this folder, we created individual testing files corresponding to each front-end page of our website. Following the naming convention recommended by Jest, each testing file was named after its respective page, suffixed with .test.js.

For example, if a page in our application is named Employee.js, we created a corresponding test file named Employee.test.js. Within these test files, we crafted unit tests focusing on the key features and functionalities of each page. These tests were designed to verify the expected behavior of the front-end components and ensure that they operate as intended.

Upon completing the creation of test files for each front-end page, we executed the tests using the command “npm test” in the terminal. Additionally, to assess the code coverage achieved by our testing suite, we utilized the command “npm test -- --coverage”. This command generated detailed insights into the extent of code covered by our tests, allowing us to identify areas that require further testing or optimization.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our testing efforts. The following screenshots illustrate the code coverage metrics obtained from our front-end testing:

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	81.75	52.23	73.94	82.23	
Components/CondoOwnerDashboard	100	100	100	100	
OwnerDashboard.js	100	100	100	100	
Components/DailyOperations	100	100	100	100	
DailyOperations.js	100	100	100	100	
Components/EmployeePage	64.51	0	38.46	64.51	
Employee.js	50	0	20	50	63-109,148,153-161,184-190
NewEmployeePopup.js	100	100	100	100	
Components/FinanceDashboard	100	100	100	100	
Finance.js	100	100	100	100	
Components/HomePage	100	100	100	100	
Home.js	100	100	100	100	
Components/ManagerEmployeePage	84.61	20	60	84.61	
ManagerEmployeePage.js	84.61	20	60	84.61	44-85
Components/NavBar	84.31	71.42	78.26	84.44	
NavBar.js	69.56	50	55.55	71.42	20,72-79
NavBar_Company.js	100	100	100	100	
NavBar_HomePage.js	100	100	100	100	
NavBar_User.js	91.66	100	83.33	90	20
Components/Popups	100	100	100	100	
MaintenanceRequest.js	100	100	100	100	
Notification.js	100	100	100	100	
PaymentHistory.js	100	100	100	100	
ReservationSuccess.js	100	100	100	100	
Components/PropertyProfileManagement	60	0	50	66.66	
PropertyProfileManagement.js	60	0	50	66.66	17-21
Components/RegistrationKey	80	100	50	80	
RegistrationKey.js	80	100	50	80	42
Components/ReservationPageCompany	80	73.91	70	80.59	
ReservationPageCompany.js	80	73.91	70	80.59	92,107-109,129-132,163,185,214-224,241-249
CustomeHooks	0	100	0	0	
useLogout.js	0	100	0	0	4-19

Test Suites: 1 failed, 18 passed, 19 total
Tests: 84 passed, 84 total
Snapshots: 0 total
Time: 7.662 s

Figure 27: Front-End Code Coverage

We have three JavaScript components— Login.js, Profile.js, and SignUp.js — for which we have created corresponding .test.js files using Jest. However, these tests consistently fail due to an issue with the ***`import axios from 'axios';`*** statement. After exhausting all possible solutions to resolve this import issue, we have decided to exclude these components from our coverage calculations. Despite this, our overall coverage remains robust. Specifically, our Statement Coverage and Line Coverage both exceed 80%, while our Function Coverage stands at 73.94%, nearing our target of 80%. This demonstrates significant progress in enhancing our testing framework and overall coverage metrics. Thus, we consider this phase of our testing strategy to be largely successful, closely aligning with our goal of achieving 80% coverage.

Link to Github Front-End Testing (Test Cases):

https://github.com/Tanya-STY/UrbanKey/tree/main/urbankey/src/FrontEndTesting

Back-End Testing

Introduction:
Backend testing is essential for ensuring the functionality, performance, and security of web applications. In our Condo Management System Website project, we employed Pytest, a powerful testing framework for Python, to conduct backend testing. This report outlines the tools utilized, the testing approach adopted, and presents the code coverage achieved through our testing efforts.

Tools Used:
Pytest was selected as the primary testing framework for our backend testing needs. With its simplicity and flexibility, Pytest provides a comprehensive suite of features for writing and executing tests in Python applications, making it an ideal choice for our project.

Testing Approach:
To organize and streamline our backend testing efforts, we established a dedicated folder named "backend" within the project repository. Within this folder, we created individual testing files corresponding to different backend functionalities and pages of our website.

For instance, if a backend module is responsible for handling employee-related operations, we created a test file named test_employee.py within the backend folder. Following the conventions of Pytest, we crafted test functions within these files to validate the behavior of backend components and functionalities.

Our testing approach focused on covering various aspects of backend functionality, including data validation, business logic, API endpoints, and database interactions. Each test function was designed to verify specific scenarios and edge cases, ensuring comprehensive test coverage.

Upon completing the creation of test files and test functions, we executed the tests using Pytest's command-line interface. Pytest automatically discovered and executed the test cases within the backend folder, providing detailed feedback on test results and identifying any failures or errors encountered during testing.

Code Coverage:
The code coverage analysis provided valuable insights into the effectiveness of our backend testing efforts. By integrating code coverage measurement into our testing workflow, we gained visibility into the percentage of code executed by our test suite and identified areas that require additional testing or optimization.

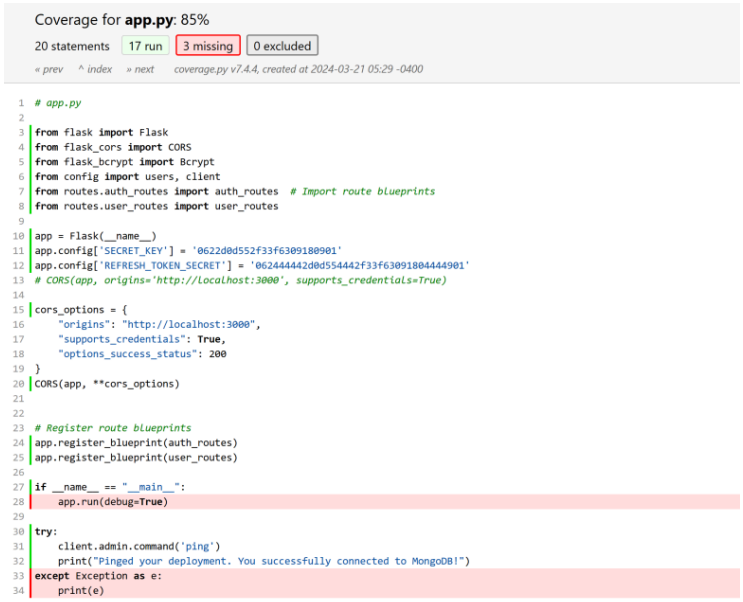
Coverage report: 90%

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Module	*statements*	*missing*	*excluded*	*coverage* ↓
__init__.py	0	0	0	100%
config.py	6	0	0	100%
model__init__.py	0	0	0	100%
model\handleRefresh.py	22	0	0	100%
routes__init__.py	0	0	0	100%
services__init__.py	0	0	0	100%
tests__init__.py	0	0	0	100%
tests\test_auth.py	111	0	0	100%
tests\test_tokens.py	0	0	0	100%
tests\test_todo.py	135	1	0	99%
model\user.py	36	4	0	89%
routes\user_routes.py	27	3	0	89%
app.py	20	3	0	85%
services\token_service.py	27	6	0	78%
routes\auth_routes.py	18	5	0	72%
model\auth.py	81	26	0	68%
Total	**483**	**48**	**0**	**90%**

coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

Figure 28: Back-End Code Coverage


Coverage for **app.py**: 85%

20 statements | 17 run | 3 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
# app.py

from flask import Flask
from flask_cors import CORS
from flask_bcrypt import Bcrypt
from config import users, client
from routes.auth_routes import auth_routes  # Import route blueprints
from routes.user_routes import user_routes

app = Flask(__name__)
app.config['SECRET_KEY'] = '0622d0d552f33f6309180901'
app.config['REFRESH_TOKEN_SECRET'] = '062444442d0d554442f33f63091804444901'
# CORS(app, origins='http://localhost:3000', supports_credentials=True)

cors_options = {
    "origins": "http://localhost:3000",
    "supports_credentials": True,
    "options_success_status": 200
}
CORS(app, **cors_options)


# Register route blueprints
app.register_blueprint(auth_routes)
app.register_blueprint(user_routes)

if __name__ == "__main__":
    app.run(debug=True)

try:
    client.admin.command('ping')
    print("Pinged your deployment. You successfully connected to MongoDB!")
except Exception as e:
    print(e)
```


Coverage for **model\handleRefresh.py**: 100%

22 statements | 22 run | 0 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

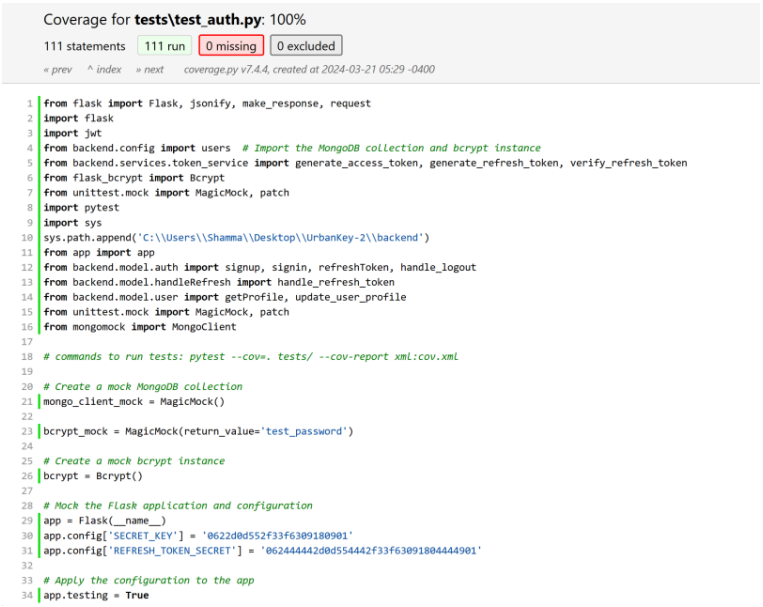
```python
from flask import request, jsonify
from config import users
import jwt
from jwt.exceptions import ExpiredSignatureError, InvalidTokenError
from datetime import datetime, timedelta, timezone



def handle_refresh_token(app):
    # Get the refresh token from cookies
    cookies = request.cookies
    if 'jwt' not in cookies:
        return jsonify({'error': 'Refresh token not found in cookies'}), 401

    refresh_token = cookies['jwt']

    # Find the user with the given refresh token in the collection
    found_user = users.find_one({'refreshToken': refresh_token})
    if not found_user:
        return jsonify({'error': 'User not found or invalid refresh token'}), 403

    try:
        # Verify the refresh token and extract username
        decoded = jwt.decode(refresh_token, app.config['REFRESH_TOKEN_SECRET'])
        email = decoded['username']
    except ExpiredSignatureError:
        return jsonify({'error': 'Refresh token has expired'}), 403
    except InvalidTokenError:
        return jsonify({'error': 'Invalid refresh token'}), 403

    # Create new access token
    token = jwt.encode({
        'email': email,
        'exp': datetime.now(timezone.utc) + timedelta(minutes=10)  # Adjust the expiration time as needed
```


Coverage for **routes\user_routes.py**: 89%

27 statements | 24 run | 3 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
from flask import Blueprint, request, jsonify
from functools import wraps
from model.user import getProfile, update_user_profile
from services.token_service import verify_token

user_routes = Blueprint('user_routes', __name__)

def token_required(f):
    @wraps(f)
    def decorated(*args, **kwargs):
        token = request.headers.get('Authorization')

        if not token or not token.startswith('Bearer '):
            return jsonify(message='Unauthorized'), 401

        token = token.split(' ')[1]

        decoded_token = verify_token(token)
        if not decoded_token:
            return jsonify(message='Invalid or expired token'), 403

        # Attach token payload to request object for easy access in route functions
        request.email = decoded_token.get('email')
        request.role = decoded_token.get('role')

        return f(*args, **kwargs)

    return decorated


@user_routes.route("/Profile", methods=['GET'])
@token_required
def profile_route():

```


Coverage for **tests\test_auth.py**: 100%

111 statements | 111 run | 0 missing | 0 excluded

« prev ^ index » next coverage.py v7.4.4, created at 2024-03-21 05:29 -0400

```python
from flask import Flask, jsonify, make_response, request
import flask
import jwt
from backend.config import users  # Import the MongoDB collection and bcrypt instance
from backend.services.token_service import generate_access_token, generate_refresh_token, verify_refresh_token
from flask_bcrypt import Bcrypt
from unittest.mock import MagicMock, patch
import pytest
import sys
sys.path.append('C:\\Users\\Shamma\\Desktop\\UrbanKey-2\\backend')
from app import app
from backend.model.auth import signup, signin, refreshToken, handle_logout
from backend.model.handleRefresh import handle_refresh_token
from backend.model.user import getProfile, update_user_profile
from unittest.mock import MagicMock, patch
from mongomock import MongoClient

# commands to run tests: pytest --cov=. tests/ --cov-report xml:cov.xml

# Create a mock MongoDB collection
mongo_client_mock = MagicMock()

bcrypt_mock = MagicMock(return_value='test_password')

# Create a mock bcrypt instance
bcrypt = Bcrypt()

# Mock the Flask application and configuration
app = Flask(__name__)
app.config['SECRET_KEY'] = '0622d0d552f33f6309180901'
app.config['REFRESH_TOKEN_SECRET'] = '062444442d0d554442f33f63091804444901'

# Apply the configuration to the app
app.testing = True
```

Figure 29

New test files and cases, specifically "test_reservations.py", "test_reservationsCompany.py", and "test_user.py", have been created and implemented to enhance backend testing. These additions complement our existing suite of tests. As a result, we have achieved an 85% coverage rate for our `app.py`, demonstrating the effectiveness of our testing efforts.

Link to Github Backend Testing (Test Cases):

- For “test_reservations.py”, “test_finance.py” and “test_user.py” files: https://github.com/Tanya-STY/UrbanKey/tree/main/backend/tests

- For “test_todo.py” and “test_auth.py” files: https://github.com/Tanya-STY/UrbanKey/tree/backend-testing/backend/tests

Sprint 5 Testing Plan

This project documentation refers to the outlining of a comprehensive strategy for verifying and validating the software developed during the fifth sprint of the Condo Management System project. In order to meet the requirements of the project, it is crucial to incorporate a multi-level testing strategy that includes unit tests, integration tests, system tests, and a combination of automated and manual testing processes.

As a reminder, the stack we have selected and used for our Condo Management System is React for the front-end of the website app, as well as HTML/CSS/ JavaScript. For the backend, we have used Python alongside Flask, a micro web framework. Moreover, MongoDB was used as our NoSQL database. No APIs were used.

Testing Tool Selection:

As we've progressed in the development of our project, we have continued to employ Pytest, a testing framework for Python, as our tool for backend testing. Additionally, we have incorporated the usage of *Jest*, a JavaScript testing framework, alongside the *React Testing Library* in order to test our front-end React components. We will stick with these tools moving forward in our subsequent sprints.

Front-end Testing:

The combination of Jest and the React Testing Library allows us to thoroughly test the behavior and functionality of our React components in isolation. Each React component is accompanied by a corresponding ***.test.js*** file, which contains the unit tests for that component. These tests can be found in the FrontEndTesting directory of our GitHub repository.

Back-end Testing:

Using Pytest, our tests are designed to verify the functionality of our Flask-based REST API endpoints and the underlying business logic. The back-end tests for "test_auth.py" and "test_todo.py" can be found in this backend/tests-1 directory of our repository. Additionally, there are 4 test files that were added since Sprint 4, being "test_finance.py", "test_reservations.py", "test_reservationsCompany.py" and "test_user.py", which can be found here backend/tests-2.

Examples of test file:

- The "app.py" file assesses the functionality and robustness of the application's user profile management and authentication token processes. It simulates critical user interaction scenarios, such as profile retrieval, profile updates, and handling of refresh tokens under various conditions. By using MagicMock and patch from the unittest.mock library, the tests avoid direct database interactions and cryptographic operations, instead simulating these processes to validate the application's behavior in controlled environments. For example, it tests the profile update functionality by simulating a user request to

update their profile information, expecting successful completion or handling of exceptions gracefully. The refresh token handling is properly tested under different circumstances, including valid tokens, expired tokens, and invalid tokens, ensuring the application correctly validates and responds to each scenario. Additionally, the file incorporates tests for custom decorators used for route protection, verifying that routes are accessible only with valid authentication tokens and appropriately rejecting unauthorized access attempts. This approach to testing not only guarantees the security and efficiency of the user management and authentication systems but also ensures that potential issues can be identified and resolved promptly, enhancing the overall integrity and reliability of our web app.

- The “test_auth.py” file is structured to conduct automated tests for the Flask-based backend, specifically focusing on user authentication mechanisms, utilizing the Pytest framework. It effectively simulates various authentication-related scenarios including user sign-up, sign-in, token refresh, and logout processes, thereby ensuring the integrity and security of the user management system. By harnessing mocks for database interactions and bcrypt hashing, the tests are insulated from real database transactions, enabling a controlled testing environment that mirrors expected operational behaviors without actual data persistence. For instance, the tests examine the system's handling of duplicate email registrations, verify the correctness of generated JWT tokens upon user login, and assess the system's response to token refresh requests, amongst other functionalities. This approach not only safeguards the application against unauthorized access scenarios but also rigorously checks the system's response to both routine and exceptional user behaviors. Through strategic mocking of database responses and cryptographic operations, these tests offer a solid examination of the authentication workflows, highlighting any potential discrepancies in the authentication logic. This testing procedure is critical in preemptively identifying and rectifying any vulnerabilities or logic flaws, hence strengthening the application's reliability.

- The “test_finance.py” file is designed to test the financial-related functionalities within a Flask web application, ensuring that components work correctly without interacting with a real database. It starts by setting up the Python environment to include necessary directories in the system path, followed by importing essential modules like Flask and pytest. Mock objects and patching are utilized to simulate interactions with a MongoDB instance, preventing actual database operations during testing. The `app` object is configured for testing, and the `financial_routes` blueprint is registered to handle related routes. Testing functions are then defined to verify the behavior of API endpoints such as retrieving and updating financial data, focusing on response status and content validation. This setup illustrates a robust approach to backend testing by isolating the application from its external dependencies, thereby enabling reliable unit tests.

- The “test_reservations.py” file ensures that the application's reservation system operates seamlessly by configuring Flask for testing and employing Flask's test client for isolated testing environments. The tests cover a range of functionalities, from fetching all reservations to handling specific reservation requests with valid and invalid registration keys. They validate API endpoints to ensure correct status codes and data formats are returned, and verify the application's robust handling of both valid inputs and edge cases such as deactivated keys. This thorough testing strategy is critical for maintaining the reliability and integrity of the reservation system, thereby enhancing overall application stability and user satisfaction.

- The “test_user.py” file verifies critical user profile operations, such as updating and fetching user profiles. They use mock data and headers to simulate real requests, checking both the execution flow and the accuracy of the response data against expected outcomes, such as correct status codes and appropriate response messages. This rigorous testing confirms the reliability of user profile endpoints, ensuring that they handle data correctly and respond as expected under various scenarios, ultimately aiding in maintaining the robustness and reliability of the user management system within the application.

Levels of Testing

Unit Testing: The backend testing, as seen in files like “test_auth.py” and “test_todo.py”, encompasses unit tests targeting individual modules or functionalities, such as the authentication processes and todo item management. These tests, by leveraging mocks for dependencies like database connections, aim to verify that specific backend functionalities perform as expected independently from the rest of the system. On the frontend side, the files ending in *.test.js* are geared towards unit testing of React components. These tests critically assess whether individual components behave correctly in isolation, including checks for correct rendering, responsive user input handling, and appropriate state management changes.

For Sprint 5, we plan on expanding test coverage to ensure all critical paths and edge cases are examined as paramount, alongside enhancing test isolation to guarantee that tests evaluate components in a vacuum, hence avoiding unintended dependencies. We also want to refactor tests for clarity and maintainability ensures that the test suite remains accessible and easy to update alongside application changes.

Integration Testing: On the backend, represented by files like “test_auth.py” and “test_todo.py”, integration tests go beyond individual unit tests by simulating the interaction between various modules, such as authentication processes and database operations. These tests validate the cohesive functionality of the system under test scenarios that mirror real-world usage, albeit with dependencies like databases being mocked. This ensures that different parts of the application work harmoniously to accomplish tasks like user registration and todo item management. In the frontend, the React component tests (.test.js files) subtly incorporate integration testing by examining how components interact with each other and with the overall application state. Through the React Testing Library, these tests assess not only the rendering and user interaction within individual components but also their ability to integrate and function within the larger application ecosystem, such as handling API responses or user input events. This approach to testing underscores the importance of both isolated functionality and integrated performance, ensuring that all parts of the application operate cohesively to deliver a seamless user experience.

For Sprint 5, we plan to broaden the scope to encompass more comprehensive interactions between components, improving the simulation of production environments, and incorporating real database interactions can uncover more subtle integration issues.

System Testing**:** For Sprints 5, if we have time, we plan on implementing system tests, which would involve testing the complete application, including real database interactions, through automated UI tests or API tests that hit the actual endpoints without mocking the database or internal logic. We plan on implementing End-to-End (E2E) testing tests in Sprint 4 to test the application as a whole, simulating real user scenarios from

start to finish. This includes testing the integration between the frontend, backend, and any external services. We might use a tool such as Cypress, which is a powerful tool for E2E testing that can simulate real user interactions with our React application. Cypress tests can cover scenarios such as signing up, logging in, navigating through the app, and interacting with web elements.

Automation: Currently, our development process does not include the use of a Continuous Integration (CI) tool, such as Jenkins, Travis CI, or GitHub Actions, which would automate the execution of our tests upon every commit or merge request. However, depending on the time available in Sprint 5, we plan on selecting the most suitable automation tool for our web application's needs. This will facilitate early detection of flaws, and including performance benchmarks within tests.

Testing Approach:

The testing strategy for this application is comprehensive, encompassing both backend and frontend to ensure robust coverage across all functionalities. On the backend, the approach leans heavily on unit testing to verify the correctness of individual modules, such as authentication and todo list management, in isolation. These tests are instrumental in validating the business logic and integration points within the application, employing mocks for external dependencies like databases to simulate real-world interactions without the overhead of actual database operations. This layer ensures that each component performs as expected under various scenarios, laying a solid foundation for application reliability.

Transitioning to the frontend, the testing regime utilizes the React Testing Library to focus on unit tests for individual React components, as demonstrated in the various ***.test.js*** files. These tests scrutinize components in isolation, checking for correct rendering, user interaction handling, and state management. Beyond unit testing, the frontend tests subtly weave in aspects of integration testing, examining how components interrelate and function within the larger application context, such as integrating with APIs and managing application-wide state changes.

Together, these testing approaches form a multi-layered defense, ensuring that both discrete functionalities and their interactions are thoroughly vetted. This strategy not only facilitates early detection of issues within isolated units but also safeguards against integration pitfalls, paving the way for a more reliable and maintainable application. Through diligent application of both unit and integration testing, the development team can confidently evolve the application, knowing that each change is properly evaluated to maintain the high standards of quality and user experience.

Metrics and Coverage:

For Sprint 4, we used coverage tools which are integrated with our testing frameworks to measure and report coverage. For instance, to assess our front end coverage using Jest, we incorporated a test coverage script, named "test:coverage", into our package.json file. This script generates a coverage report, including metrics like statement, branch, function, and line coverage.

All metrics and coverage for the front end and the back end testing can be found in the Sprint 4 Testing Report on page 53 of this documentation.

In Sprint 5, we aim to increase our coverage % as much as possible, both for front-end and backend testing.

Acceptance Tests:

At this point in the development process, no acceptance tests were developed yet in order to validate that the system performs as expected from an end-user perspective. If we have the time in Sprint 5, we will implement acceptance tests that will cover a wide range of scenarios for our website, including user registration, property and financial management functionalities, and the use of common facilities, to simulate real-world use effectively. We might use Behavior-Driven Development (BDD) tools like Cucumber or SpecFlow to write acceptance tests in a language that is understandable, however it has not been decided yet.

Implementation Plan:

As our project progresses through its development phases, we will integrate testing into the development workflow by setting up a CI pipeline in Sprint 5, as mentioned previously, that runs tests automatically on every commit. This will ensure that the pipeline includes steps for running unit tests, integration tests, and system tests. Additionally, we will schedule regular review sessions to assess test coverage and effectiveness, adjust testing strategies as needed, and ensure that testing keeps pace with development. Lastly, we will attempt to encourage collaboration between the teammates in charge of both development and testing to ensure that testing reflects the user's needs and project requirements.

Link to Github Front-End Testing (Test Cases):
https://github.com/Tanya-STY/UrbanKey/tree/main/urbankey/src/FrontEndTesting

Link to Github Backend Testing (Test Cases):

- For "test_reservations.py", "test_finance.py" and "test_user.py" files: https://github.com/Tanya-STY/UrbanKey/tree/main/backend/tests
- For "test_todo.py" and "test_auth.py" files: https://github.com/Tanya-STY/UrbanKey/tree/backend-testing/backend/tests

Code Management

Project Overview:

Sprint 4 focused on creating the missing front-end pages and working on the backend to enhance the functionality and user experience of the platform. These pages and functionalities include:

Front-End

- Reservation page for Condo Company
- Manager Employee Page
- Daily Operations Page

Back-End

- Unique navigation bar for each user types functionality
- Edit profile photo functionality
- Make new reservation functionality
- Annual financial report of users graph functionality
- Payment history functionality
- Operational costs reflected in the financial status of the user dashboard functionality
- Company sending registration keys to users

Code Management Approach:

In Sprint 4, we adopted a systematic code management strategy to ensure efficient collaboration and maintain high code quality. Each team member was responsible for developing specific pages or backend functionalities within the project. 5 team members were working on the front end of the pages and 5 team members were working on the backend of the website. We also assigned 2 team members for the front-end and backend-testing of the website.

Workflow Overview:

Frontend Development

Upon completion of frontend development for a page, the respective team member created a pull request on our GitHub repository.

Pull Request Management

Two designated team members oversaw the pull request process, ensuring the integration of frontend pages into the website and verifying functionality.

Backend Development

Following successful frontend integration, backend development commenced to implement the necessary functionality.

Issue Resolution

In cases of encountered problems, team meetings were held to discuss and find appropriate solutions. Our team will also start using the 'Issues' functionality of Github for future problems.

Branch Management

Our repository was organized with individual branches for each team member, facilitating clear tracking of contributions and merging branches for integration.

Code Quality and Management Metrics:

Quality of Source Code Reviews

During Sprint 4, our team implemented a robust peer code review process. This involved team members thoroughly examining each other's code to identify potential issues, provide feedback, and ensure adherence to project standards. This mandatory review process meant that each pull request had to be reviewed and approved by at least two team members before merging, as can be seen on Figure 26. By conducting rigorous code reviews, we aimed to maintain high code quality, improve overall understanding of the codebase, and foster knowledge sharing among team members.

To ensure comprehensive reviews, we enforced the practice of assigning reviewers to each pull request and issues. Assigning reviewers helped distribute responsibility for code inspection and ensured that multiple perspectives were considered during the review process. Additionally, we designated assignees to issues to clarify ownership and accountability for resolving specific tasks or bugs. By linking reviewers and assignees to pull requests and issues, we fostered a collaborative environment where feedback could be exchanged effectively, leading to improved code quality and faster resolution of issues.

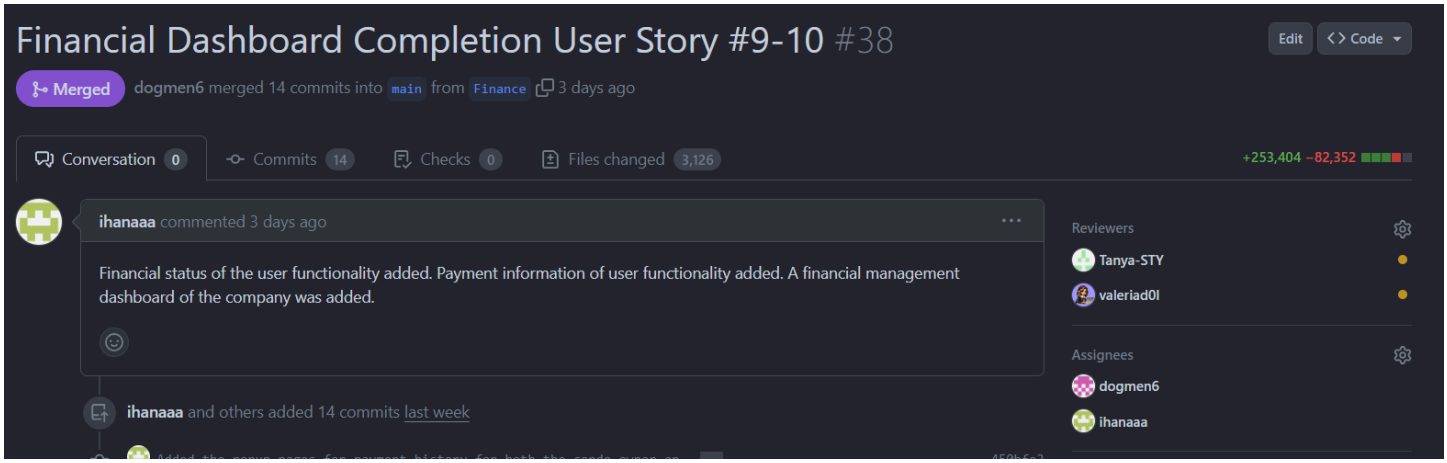


Figure 25

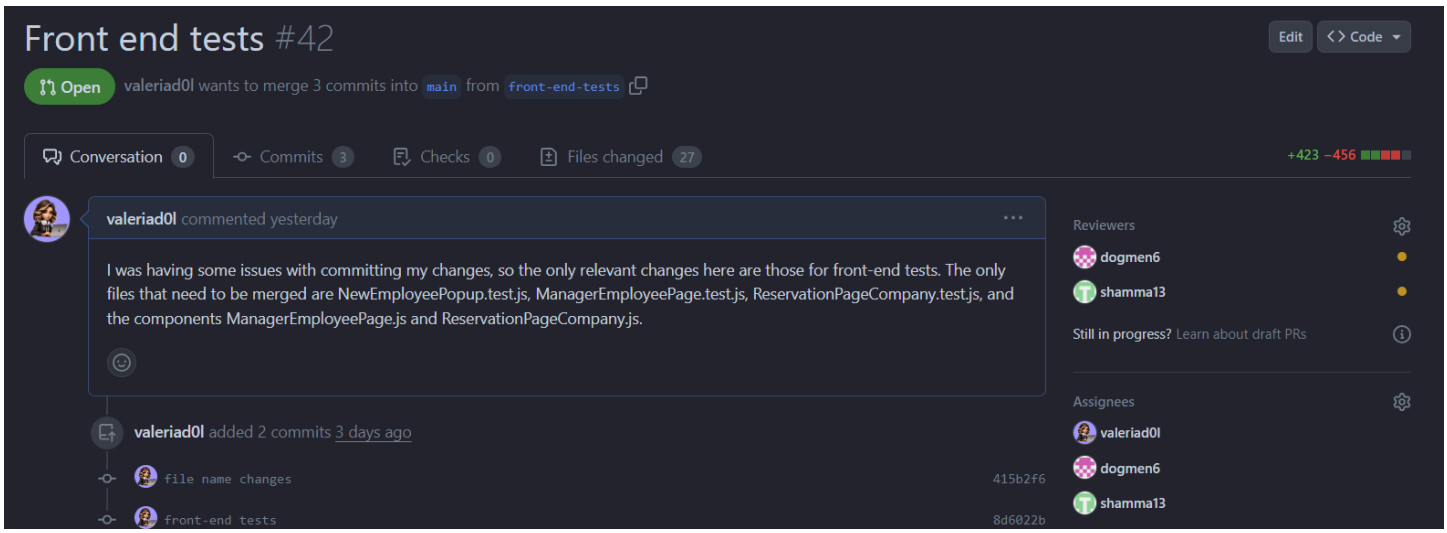


Figure 26

Correct Use of Design Patterns

Design patterns were strategically employed throughout the development process to enhance code modularity and scalability. By leveraging established design patterns such as MVC (Model-View-Controller), Singleton, Factory, and Observer, we aimed to promote code reuse, improve maintainability, and facilitate future enhancements.

Additionally, we used the Component-Based Design Pattern, given our use of React and the creation of modular components. Examples of our components include the Registration Key Page, Homepage, Condo Owners Dashboard, Condo Management Company Profile for Property Under Their Management, Financial System, Reservation System, Notifications, and Employee Page. This approach not only ensured the efficient development of our web application but also laid the foundation for a scalable and easily maintainable system

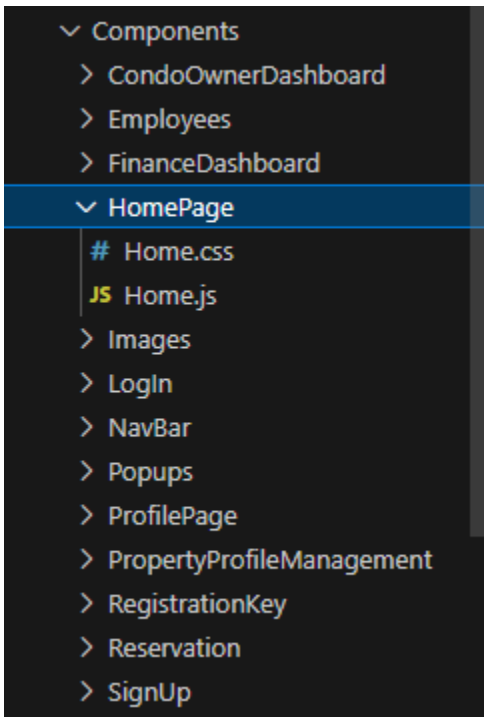


Figure 27

Moreover, we also used the In the "Arrange-Act-Assert" (AAA) pattern in our front-end testing code. This pattern is evident in the structure of each test case, where the setup (Arrange), action (Act), and assertion (Assert) phases are clearly delineated. Additionally, within each test case, there is a Given-When-Then structure, which is a variation of the AAA pattern, further organizing the tests into understandable sections. The use of this pattern enhances test readability, maintainability, and understandability by clearly separating concerns and making it easy to identify the purpose and flow of each test case. By adhering to the AAA pattern, we ensure that the tests remain focused, concise, and effective, facilitating better testing practices and overall code quality.

Link: ReservationPageCompany.test.js

```
test("renders date picker", () => {
  const { container } = render(<ReservationPageCompany />);
  const datePicker = container.querySelector(".date-picker");
  expect(datePicker).toBeInTheDocument();
});

test("renders facility checkboxes", () => {
  render(<ReservationPageCompany />);
  const facilityOptions = screen.getAllByRole("checkbox");
  expect(facilityOptions.length).toBeGreaterThan(0);
});

test("updates search term on user input", () => {
  render(<ReservationPageCompany />);
  const searchInput = screen.getByPlaceholderText(
    "Search by name, contact number, email"
  );
  fireEvent.change(searchInput, { target: { value: "John" } });
  expect(searchInput.value).toBe("John");
});
```

Figure 28

Justification for Design Patterns and Benefits:

Overall, we employed several design patterns thoughtfully chosen to optimize code modularity, maintainability, and scalability. The MVC (Model-View-Controller) pattern was applied broadly, notably in the Condo Owners Dashboard and Financial System, to enhance separation of concerns and ease of maintenance, allowing for focused development and scalable enhancements. The Singleton pattern managed critical shared resources like user sessions and configuration settings, ensuring controlled access and maintaining consistent application state. Factory patterns facilitated the dynamic creation of user profiles and notifications, particularly within the Notifications and Employee Page modules, by allowing flexibility in object creation and easing the integration of new types as the system evolves. The Observer pattern was crucial in the Notifications system, supporting decoupled components and dynamic real-time updates. We also implemented Component-Based Design across all React components, including the Registration Key Page and Homepage, which promoted reusability and isolated maintenance efforts. For testing, the Arrange-Act-Assert (AAA) and Given-When-Then patterns structured our front-end tests, such as those in `ReservationPageCompany.test.js`, to enhance clarity, maintainability, and efficiency by clearly delineating setup, actions, and assertions. These design patterns collectively not only ensured efficient development and maintenance of our web application but also laid a strong foundation for future scalability.

Respect to Code Conventions

Adherence to established code conventions was a cornerstone of our development approach. We enforced consistent coding styles, naming conventions, and formatting guidelines across the project to ensure readability and maintainability. By maintaining uniformity in coding practices, we aimed to minimize confusion, streamline collaboration, and promote code comprehensibility for all team members.

For example, in our components, such as the RegistrationKey component, we consistently apply camelCase naming conventions for variables and functions, maintain a clear folder structure, and use descriptive class names and comments to improve code readability and maintainability. This adherence to conventions ensures that our codebase remains cohesive and easy to understand, promoting efficient development and scalability.

```
<h1 className="welcomeTitle">Welcome to URBANKEY.</h1>
<div className="houseImage">
    <img src= {houseImage} alt="House Image"/>
</div>

<div className="registrationText">
    To register as a condo owner or rental user, you need a registration key provided by your condo management company.
    <br/>
    If you have not received your key or need assistance, please contact support.
</div>
```

Figure 29

Design Quality

Emphasis was placed on optimizing the design of our codebase to enhance maintainability and extensibility. We carefully evaluated factors such as the number of classes/packages, code size, coupling, and cohesion to ensure a well-structured and scalable architecture. By maintaining a balance between granularity and cohesion, we aimed to facilitate easier navigation, debugging, and future enhancements of the codebase.

Code Metrics:

Code metrics offer quantitative assessments of different facets of code quality, aiding developers in gauging the efficacy and maintainability of their codebase. Metrics like cyclomatic complexity, essential complexity, lines of code, and code duplication serve as indicators, pinpointing areas within the codebase that necessitate enhancement.

Cyclomatic complexity quantifies the number of linearly independent paths through a program's source code. In simpler terms, it measures how many unique paths there are through a program's code, which can indicate its overall complexity and potential difficulty to understand, maintain, and test.

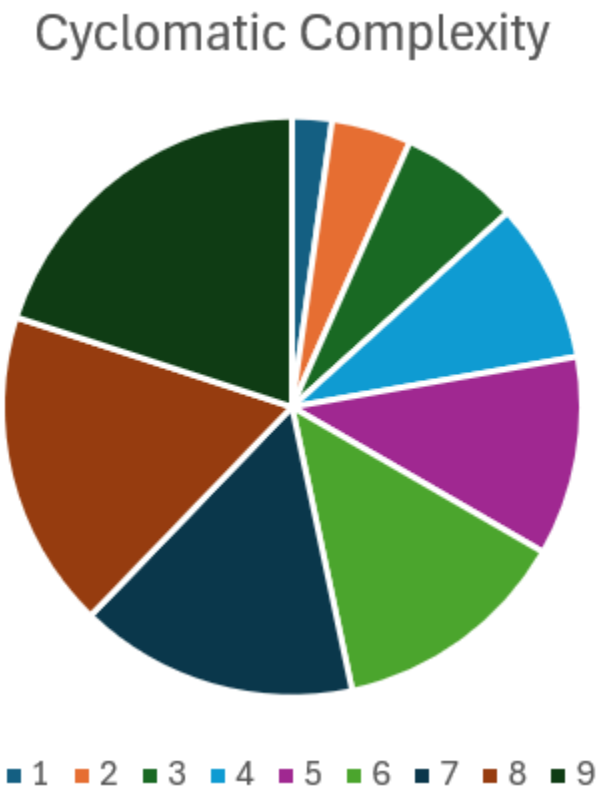


Figure 30

As we can see in the above graph, the majority of our code's cyclomatic complexity is of 1, however, the cyclomatic complexity of some functions has increased. This indicates that the number of independent paths in a function has augmented, but is still 0 for most of them. Therefore, the code complexity has augmented but is still easy to maintain.

Essential complexity is a metric aimed at assessing the structural quality of a program. It evaluates the count of entry points, termination points, and non-deductible nodes. A value closer to 1 indicates a better structured program.

Figure 31

As we can see in the above graph, the essential complexity of the code is mostly 4. This demonstrates that our project's complexity has increased, but is still pretty manageable

Lines of code is a simple and commonly used metric in software development that quantifies the size of a program by counting the number of lines in the source code. This metric includes all lines of code, including comments and blank lines, and provides a rough estimate of the overall complexity and scale of a software project.

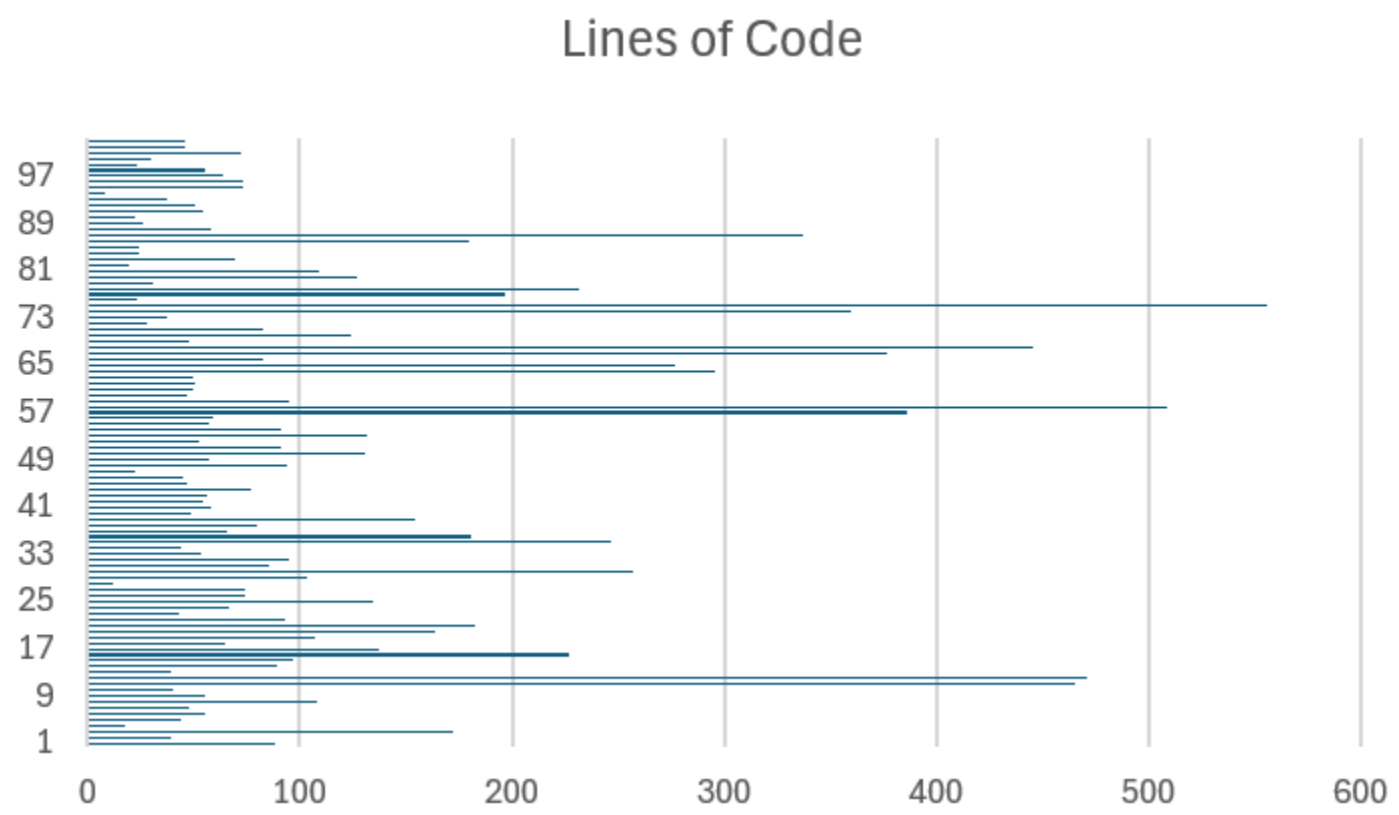


Figure 32

As we can see in the above graph, most of LOCs in our project files have augmented, meaning that the complexity of the project has also augmented. This also means that the project is harder to maintain and to review.

Source Code Documentation

Comprehensive documentation accompanied our source code to provide insights into its functionality, usage, and implementation details. Most of the code documentation we used is in the form of inline comments next to our code. This documentation served as a valuable resource for understanding the codebase, facilitating future development efforts, and onboarding new team members. By documenting key aspects of our code, we aimed to promote clarity, reduce ambiguity, and enhance maintainability throughout the project lifecycle.

```
// Generate annual report
setAnnualReport(sampleData);

// Generate overview data
const monthData = Array.from({ length: 12 }, () => 0);
sampleData.forEach((item) => {
  const month = new Date(item.date).getMonth();
  monthData[month] += item.amountPaid;
});
```

Figure 33

We also followed code documentation guidelines by adding documentation at the beginning of code files to explain the purpose of the files, such as the following figure.

```
// This custom hook, useAxiosPrivate, is designed to provide an Axios instance with built-in functionality for handling authentication tokens and automatic token refreshing.
// It utilizes the useRefreshToken and useAuth hooks to access authentication-related state and functionality.
// The Axios instance created here includes request and response interceptors to automatically attach the authentication token to outgoing requests and handle token refreshing in case of a 403 (Forbidden) response.
// By encapsulating this logic within a custom hook, components can easily access a pre-configured Axios instance for making authenticated requests while abstracting away the complexities of token management and refreshing.

import axios from 'axios';
import { useEffect } from "react";
import useRefreshToken from "./useRefreshToken";
import useAuth from "./useAuth";

const BASE_URL = 'http://localhost:5000';

const axiosInstance = axios.create({
    baseURL: BASE_URL,
    headers: { 'Content-Type': 'application/json' },
```

Figure 34

Link: https://github.com/Tanya-STY/UrbanKey/blob/main/urbankey/src/CustomeHooks/axiosPrivate.js

Refactoring Activity

Refactoring activities were systematically documented in commit messages to track code improvements and optimizations. Whenever code refactoring was performed to enhance readability, performance, or maintainability, detailed explanations were provided in commit messages. By documenting refactoring activities, we aimed to maintain transparency, communicate rationale behind code changes, and ensure continuous improvement of the codebase.

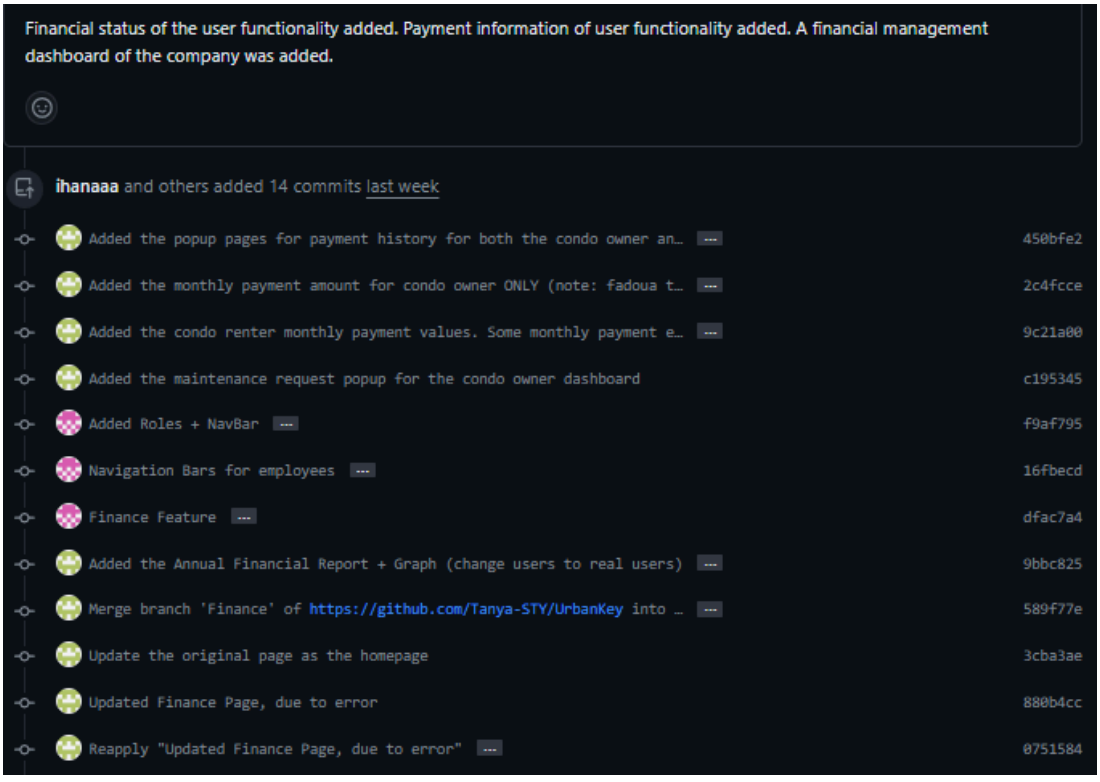


Figure 35

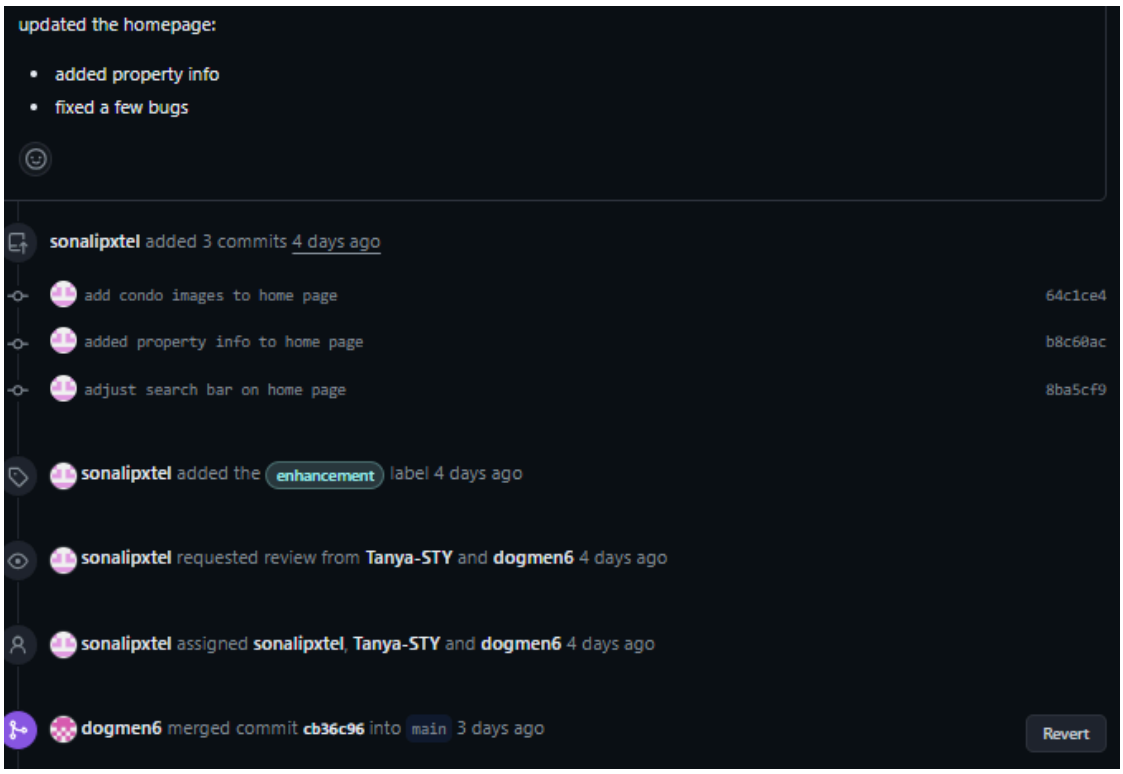


Figure 36

Links: [Update Homepage]() & [Financial Dashboard Completion]()

Commit Message Quality

Commit messages were crafted to be detailed and informative, providing context and rationale for each code change. Clear and concise commit messages helped team members understand the purpose and impact of code modifications, facilitating smoother code review processes and enhancing overall collaboration. By adhering to high standards of commit message quality, we aimed to improve traceability, code comprehension, and collaboration efficiency.

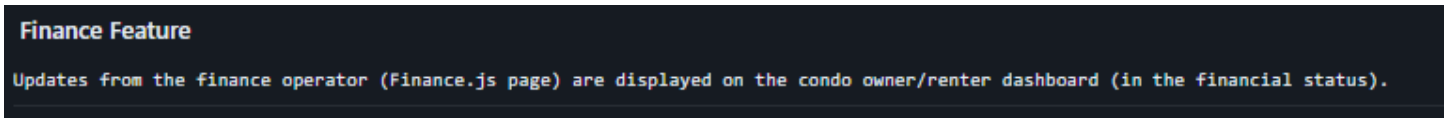


Figure 37

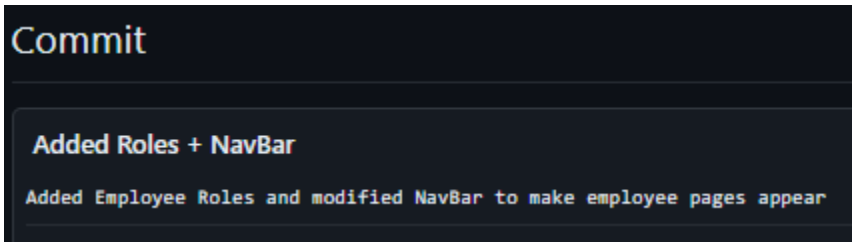


Figure 38

Links: [Added Roles + Navbar](#) **&** [Finance Feature](#)

Use of Feature Branches

Feature branches are essential for our development workflow, providing dedicated spaces for implementing specific features or functionalities on our website. Instead of using personal branches in the repository, we switched to enforcing a feature-branch workflow where each new feature, bug fix, or task has its own branch derived from and merged back into the main branch upon completion. For each element, such as frontend testing, reservations, and finance, we create separate branches. This approach allows us to work independently, minimizing conflicts and streamlining collaboration. By isolating changes, feature branches ensure that new features are thoroughly tested and integrated smoothly into the main codebase. Overall, feature branches play a crucial role in our development process, enabling organized and efficient development across all aspects of our website.

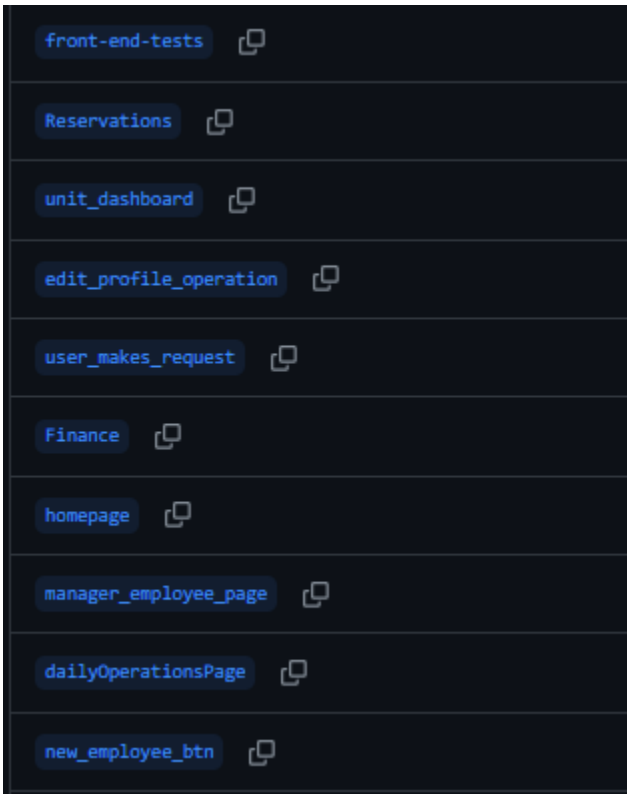


Figure 39

Atomic Commits

Commits were kept atomic, focusing on a single logical change to enhance code review and facilitate rollback if necessary. By breaking down changes into smaller, self-contained units, we aimed to improve code traceability, reviewability, and maintainability. Atomic commits also facilitated easier identification and resolution of issues, contributing to overall code quality and stability.

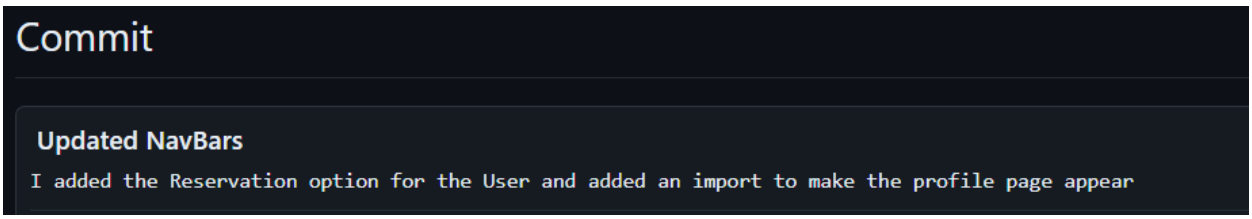


Figure 40

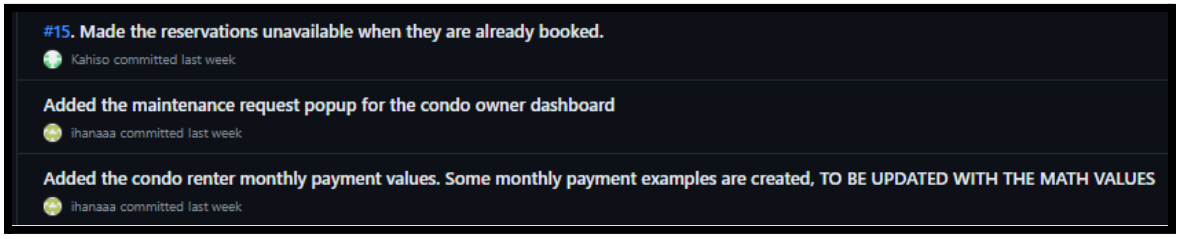


Figure 41

Bug Reporting

If we encounter any issues or bugs, we systematically reported and tracked them using GitHub's issue-tracking system. By utilizing GitHub's issue-tracking system, we aim to ensure timely resolution of bugs, improve software reliability, and enhance user satisfaction.

ID	***User Story***	***Label***	***Description***	***Link to Bug***	***Status***
#17	#5	bug	The issue with the Property Profile Management page is that the sidebar cannot be placed in the correct position	https://github.com/Tanya-STY/UrbanKey/issues/17	Completed
#18	#4	bug	Zooming in and out messes up with the CSS	https://github.com/Tanya-STY/UrbanKey/issues/18	In Progress
#30	#5	bug & enhancement	CSS bug in Profile Management	https://github.com/Tanya-STY/UrbanKey/issues/30	In Progress
#35	#1	bug, enhancement & help wanted	Edit Profile Operation	https://github.com/Tanya-STY/UrbanKey/pull/35	Completed

Table 2: Bug Report

Use of Labels for Issues/Pull Requests

In Sprint 4, we utilized issue labels for tracking and filtering tasks. By categorizing tasks and pull requests using appropriate labels such as bug, enhancement, feature, or priority level, we aim to prioritize effectively, allocate resources efficiently, and provide clear visibility into the status of ongoing development efforts. It also makes our Github repository more organized for all team members. The labels used for Sprint 4 included 'bug', 'enhancement', 'help wanted' and 'documentation'.

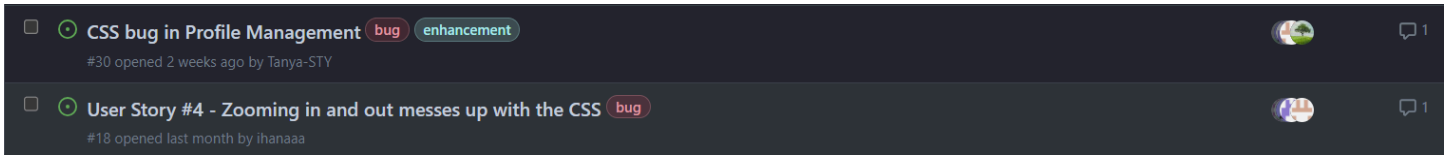


Figure 42

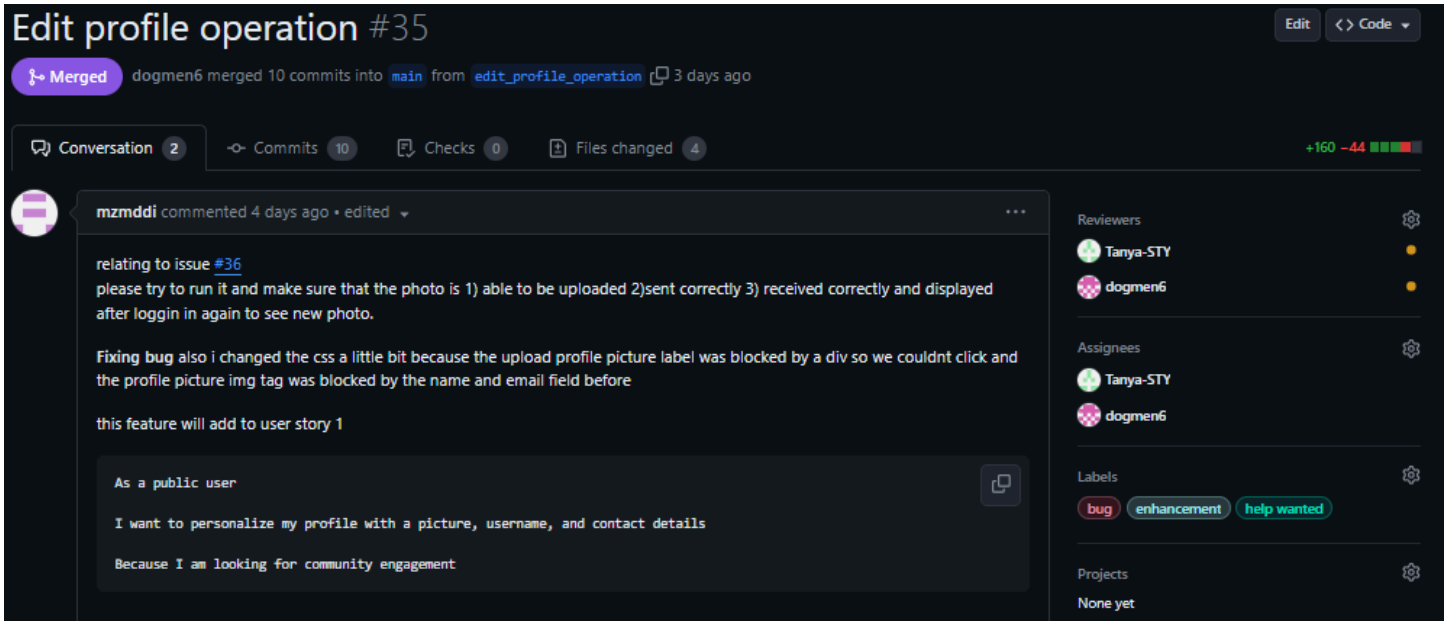


Figure 43

Link: [Edit Profile Operation]

Links Between Commits and Issues

By systematically linking commits to relevant bug reports or features, we aim to enhance traceability, accountability, and collaboration within the development team. This approach facilitates easier navigation, contextual understanding, and efficient management of code changes.

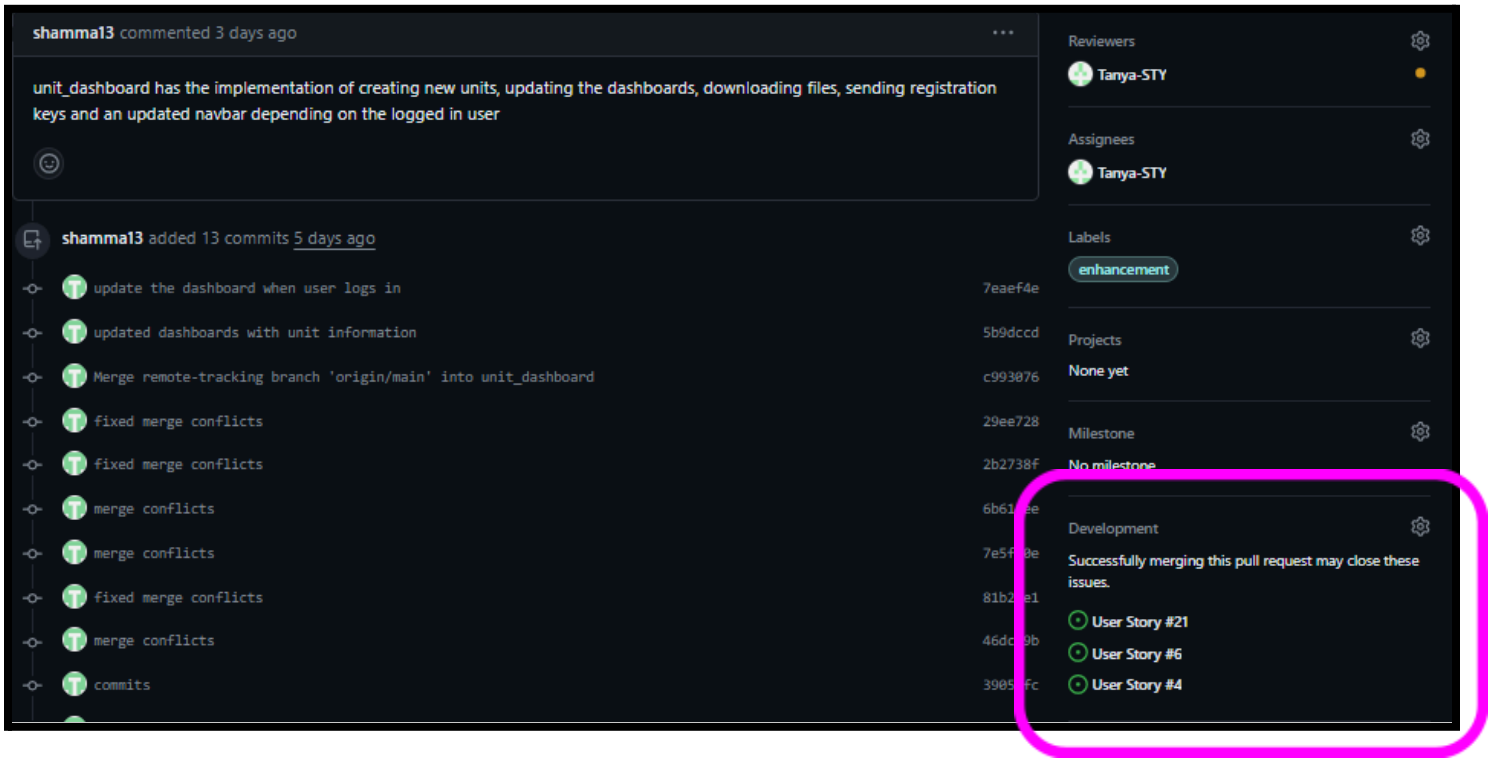


Figure 44

Link: https://github.com/Tanya-STY/UrbanKey/pull/41

Conclusion:

The code management process employed during Sprint 4 ensured effective collaboration, maintained code quality, and facilitated the timely delivery of project milestones. By adhering to established practices and leveraging collaborative tools, our team successfully navigated the complexities of development, paving the way for future iterations and enhancements of the condominium management website.

Deployment

Front-End Deployment

We chose Netlify as our frontend deployment solution for our condo management website, relying solely on its robust platform for hosting our client-side code. With Netlify, we streamlined our frontend deployment process, ensuring rapid and reliable delivery of our website to users. Leveraging its simple Git-based workflow, updates to our frontend code were seamlessly deployed with each push to our repository. Netlify's continuous deployment pipeline ensured that changes were quickly reflected on our live site, providing a smooth development experience. Its global Content Delivery Network (CDN) ensured fast loading times for users worldwide, enhancing the overall user experience. Additionally, Netlify's built-in features like form handling and serverless functions further enriched our website's functionality without the need for additional infrastructure. Overall, Netlify proved to be an invaluable tool for frontend deployment, offering simplicity, speed, and powerful features that perfectly suited our condo management website's needs.

Back-End Deployment

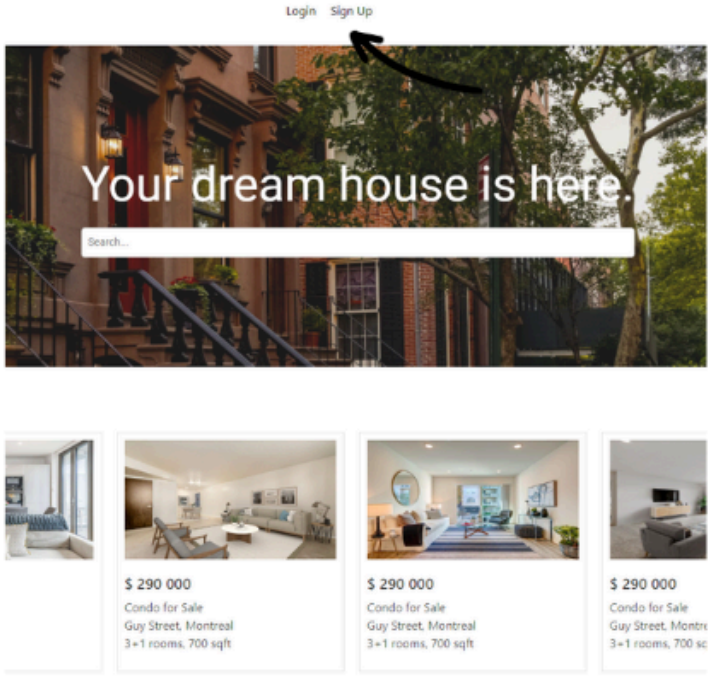
We opted for Render as our backend deployment solution for our condo management website, relying solely on its robust platform for hosting our backend services. Using Render simplified our deployment process significantly, allowing us to focus on building the core functionalities of our website without the hassle of managing infrastructure. With Render, we deployed our backend code written in Python using Flask, ensuring efficient handling of resident requests, maintenance schedules, and payment processing. Leveraging Render's direct integration with Git, we could deploy updates seamlessly with a simple push to our repository. Render's automatic scaling capabilities ensured that our website could handle varying traffic loads effortlessly, guaranteeing a smooth user experience for our residents. Additionally, Render provided built-in SSL/TLS encryption for secure communication between users and the server. Overall, Render proved to be an excellent choice for our backend deployment, providing the reliability and scalability required for our condo management website.

Link to the Fully Deployed Website: https://main--urbankey.netlify.app/

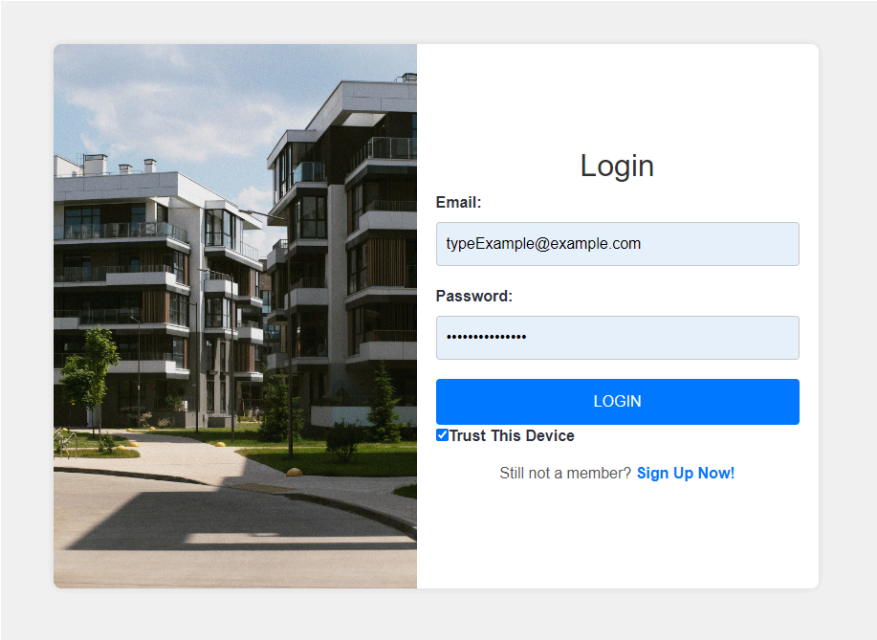
User Guide

Owner/Renter

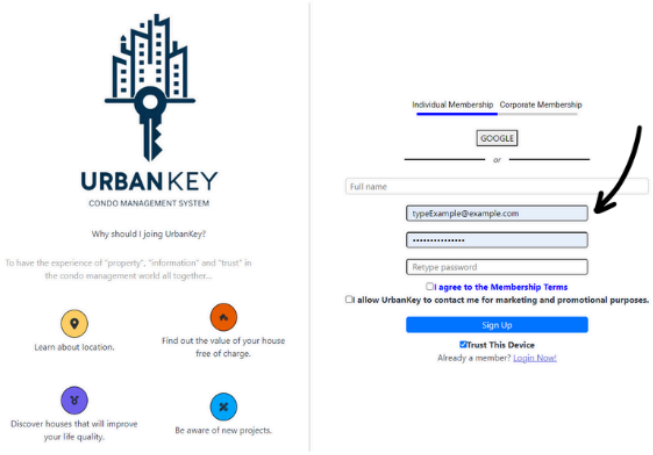
1. The first step if you are a user is to login or sign up via the home page.



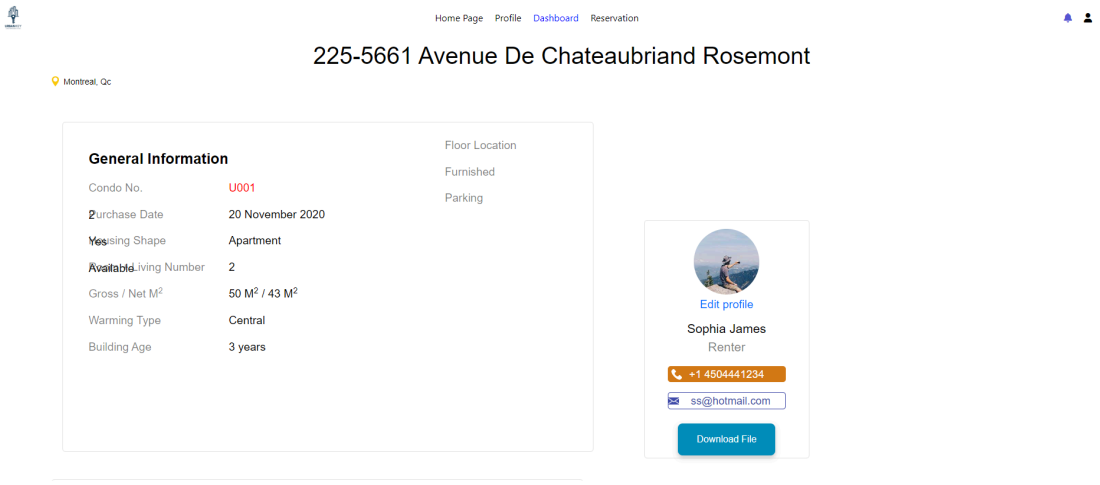
2. The login page needs to be filled if you are an existing user.



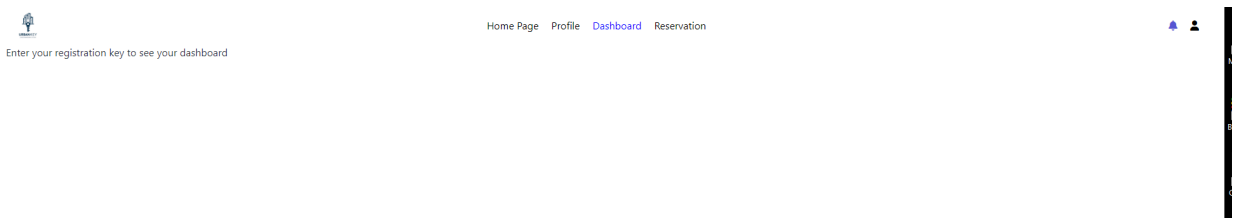
3. If you are not an existing user, click on the sign up page and fill up the needed information.



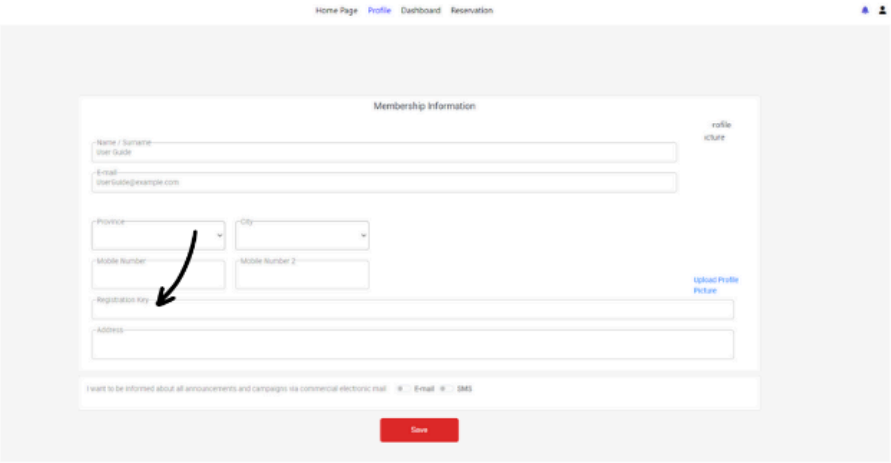
4. If you have a registration key, your dashboard should appear.



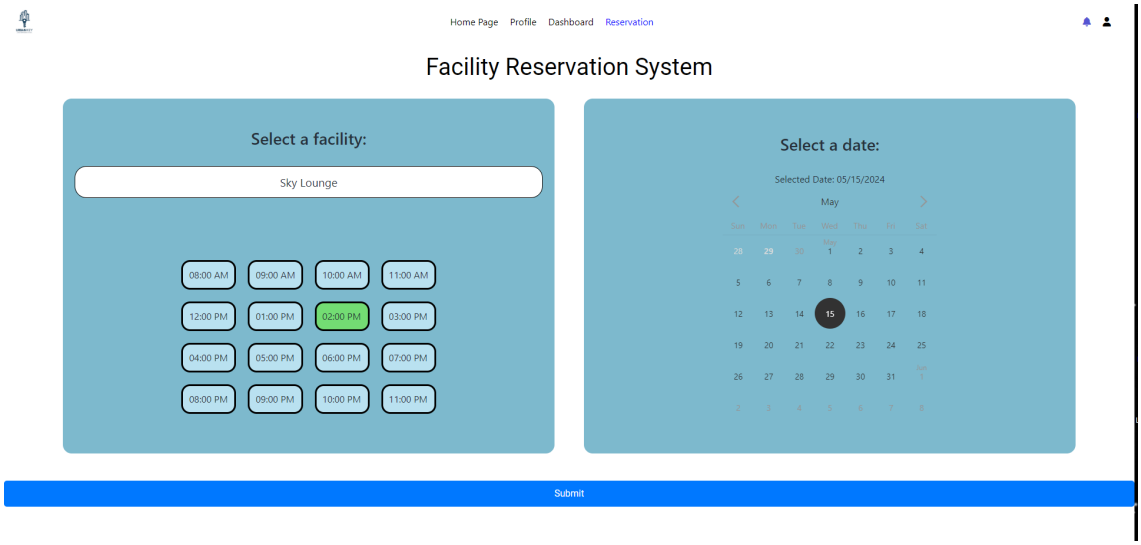
5. If you do not have a registration key, a message asking you for one will show up instead.



6. The registration key needs to be added to the Profile Information page.

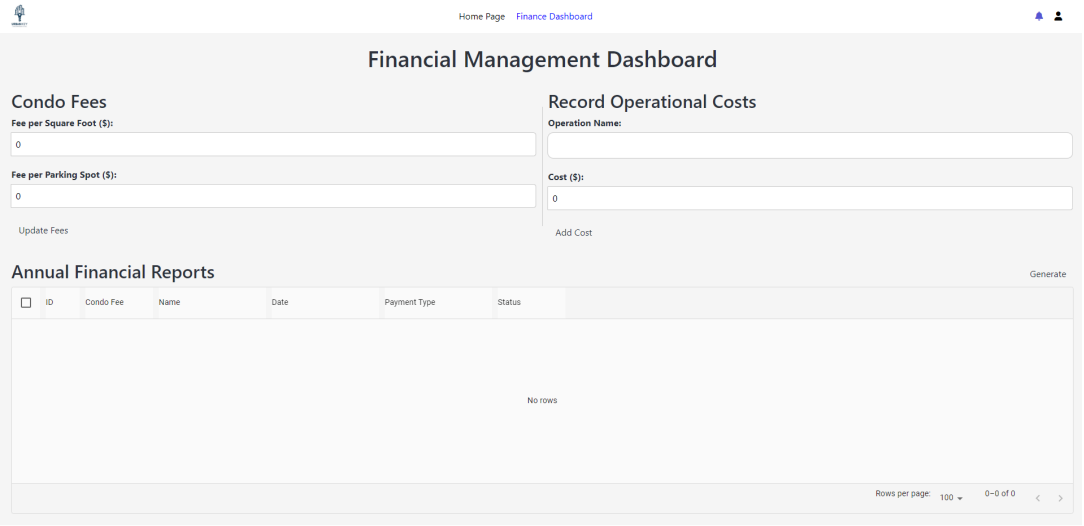


7. You can then access different tabs using the navigation bar, like the reservation page where you can reserve a facility.



Finance Operator

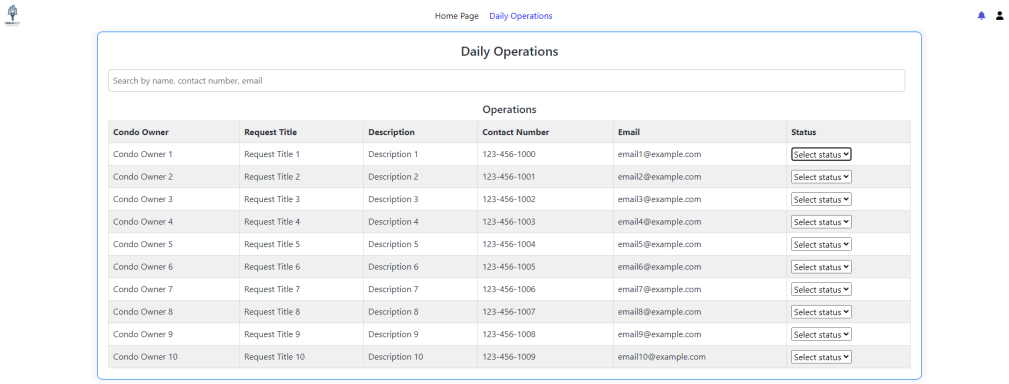
1. If you log in as a financial operator, you have access to the finance dashboard.



2. You can update financial information on the dashboard.

Daily Operator

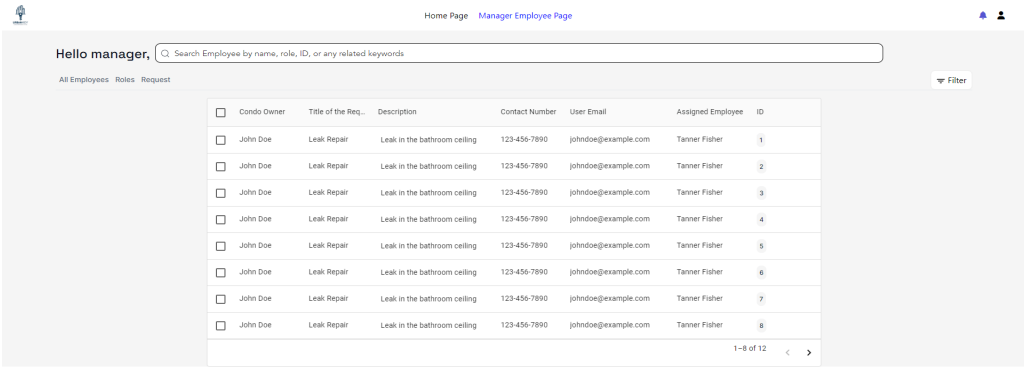
1. If you log in as a daily operator, you have access to the daily operations dashboard.



2. You can select and update the status of each request using the drop down on the status column.

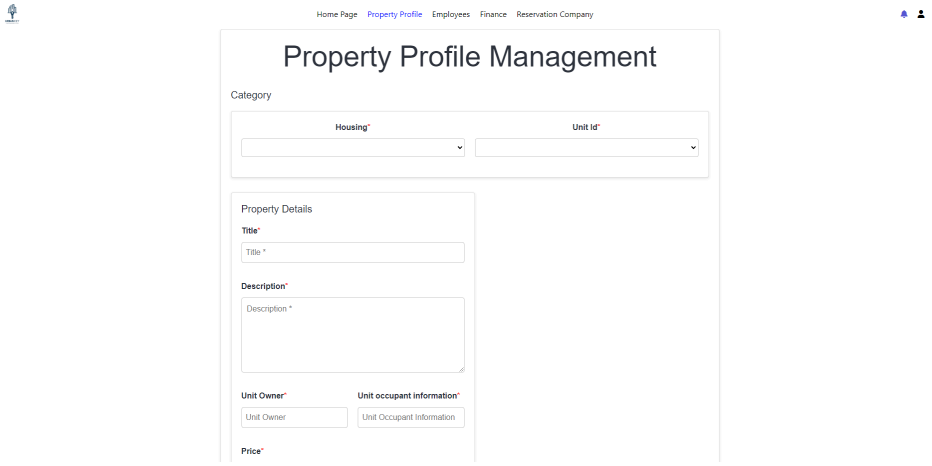
Manager

1. If you log in as a manager, you have access to the manager dashboard.

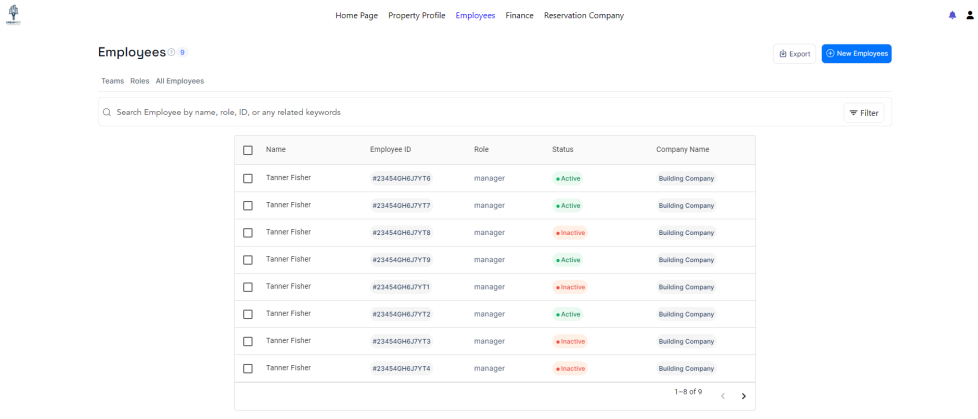


Company Admin

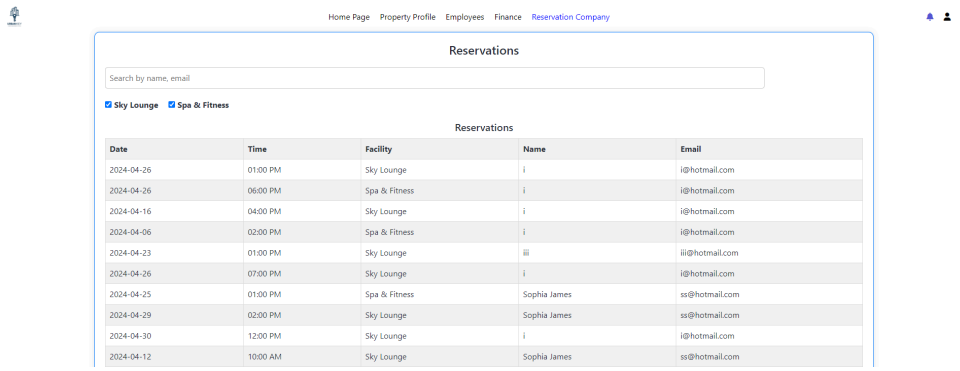
1. If you log in as a company admin, you have access to the company admin dashboard.



2. using this property profile management, you can add new units by filling the needed details.
3. You can also access the finance tab from the navigation bar by clicking on “Finance”.
4. By clicking on “Employees”, you can see the employees, their roles, and their status.



5. The reservations page for the facilities is accessible by clicking the “Reservation Company”.



User Credentials

To log in as a company:
Username: duproprio@hotmail.com
Password: 123

To log in as a finance operator:
Username: mariofinanceoperator@gmail.com
Password: mario

To log in as a daily operator:
Username: lucadailyoperator@gmail.com
Password: luca

To log in as a manager:
Username: manager@gmail.com
Password: manager

Completeness of the Solution

Completeness of the Solution:

The condo management system website we have developed offers a comprehensive solution that fulfills a wide range of user needs, ensuring a seamless experience for both residents and property managers. Through meticulous attention to detail and robust backend development, our solution addresses various aspects of property management, financial tracking, user interaction, and efficient communication.

For all 21 user stories, the frontend is completed, providing a user-friendly interface that caters to the needs of condo owners, rental users, property managers, and financial system agents. From personalized profile settings to detailed property management, financial tracking, and service requests, our solution encompasses a broad spectrum of functionalities.

On the backend, all user stories are completed except for user stories #19 and #20. These remaining backend tasks will further enhance the system's functionality, ensuring efficient handling of resident requests and smooth assignment of tasks to the appropriate employees.

Traceability Matrix with Requirements:

User Story	Requirements	Backend Status	Frontend Status	Issue Link
#1	Personalize profile with picture, username, and contact details	Completed	Completed	Issue #43
#2	Registration with a key from the management company for condo ownership	Completed	Completed	Issue #44
#3	Registration with a key from the management company for rental users	Completed	Completed	Issue #45
#4	Comprehensive dashboard for property and financial details	Completed	Completed	Issue #18 Issue #46
#5	Creation of	Completed	Completed	Issue #17

	property profile with essential details			Issue #30 Issue #47
#6	Upload of condo files for transparency and communication	Completed	Completed	Issue #48
#7	Entry of detailed information for each condo unit, parking spot, and locker	Completed	Completed	Issue #49
#8	Generation and sending of registration keys	Completed	Completed	Issue #50
#9	Entry of condo fee per square foot and per parking spot	Completed	Completed	Issue #51
#10	Calculation and presentation of fees for each unit	Completed	Completed	Issue #52
#11	Recording of operational budget and associated costs	Completed	Completed	Issue #53
#12	Generation of annual financial report	Completed	Completed	Issue #54
#13	Setup of system for managing reservations of common facilities	Completed	Completed	Issue #55
#14	Reservation of common facilities through a calendar-like interface	Completed	Completed	Issue #56
#15	Availability of common facilities	Completed	Completed	Issue #57
#16	Reservation system	Completed	Completed	Issue #58

	operates on a first-come-first-serve basis			
#17	Setup of different roles for employees	Completed	Completed	Issue #59
#18	Submission of requests for various tasks	In Progress	Completed	Issue #60
#19	Assignment of requests to appropriate employees	In Progress	Completed	Issue #61
#20	Notification page for updates on submitted or assigned requests	Completed	Completed	Issue #63
#21	Efficient website navigation	Completed	Completed	Issue #62

Completeness of all Final Deliverables

Our compiled report presents a comprehensive overview of our progress and plans for the upcoming months. Firstly, ensuring our source code repository remains accessible is paramount for our development process. Over the next 12 months, we'll focus on maintaining its availability and usability for all team members. Additionally, our archive of materials uploaded to the course Drive serves as a valuable resource. It contains a wealth of information and materials crucial for our ongoing projects. With organized links directing to both the source code repository and the course Drive archive, our team can seamlessly access essential resources, facilitating smoother collaboration and progress.

Compiled Report and Sprint 5 Document:
https://github.com/Tanya-STY/UrbanKey/tree/main/Sprint%205

Source code repository accessible (next 12 months):
https://github.com/Tanya-STY/UrbanKey/tree/main

Archive of everything uploaded in the course Drive:
https://drive.google.com/drive/folders/1CFthvs-QPj_Q4VrlnQAOHI1JvIzX4sdb