

EASY RENTAL

A Second Year Project Report
Submitted to the Faculty
of the
Bennett University

By

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1. INTRODUCTION

- In India, most of the youth are either undergoing higher education or are employed. Many of them need to relocate to a location near to their office or the educational institute. While relocating they do not have the information regarding the affordable rooms near the location and often rent out houses that do not meet their requirements or houses that are too expensive.
- Easy Rental is a property listing and renting website that provides strategically located, good quality, managed co-housing for students and working professionals. It allows property owners to list their property and lets students and working professionals to browse through them and select housing facilities that suit their needs.
- Further, they will be able to book property for a specific period of time as specified in the renting agreement. Apart from providing accommodation, Easy Rental allows conveniently ordering delicious home-style food. Thus, Easy Rental is a small step in the way of bringing 'Ease of Living' in the life of people.

1.1. Problem Statement

Easy Rental is an attempt to solve the following issues:

- Unfair denial of housing to bachelors- Students and working professionals often find it difficult to get long term accommodations at affordable rates. Landlords refuse to rent out to bachelors fearing they would get involved in illegal activities.
- Living alone with no cooking skills- Due to a heavy load of work from office or coaching classes, bachelors are left with no time to satisfy their hunger with nutritional food and often have to rely on fast-food chains.
- Dealing with brokers- Not having a broker between a potential tenant and a property owner benefits both parties. Easy Rental removes the broker from the equation and lets home seekers rent a house without paying brokerage by directly putting them in touch with the property owners.

2. BACKGROUND RESEARCH

Research has always been a key fundamental in guiding a project to success. Before starting our project, we have thoroughly researched articles, documents, and similar existing solutions.

1. There have been several articles and surveys which prove that it is better to eliminate the broker from the equation while hunting for a room. An article published by Your Room talks about the same. It says these brokers demand 15-20% of 3 month's rent as their commission. Sometimes, in the pursuit of renting not so famous property, they even neglect the needs of the tenant.

2. In a recent statement from OYO executive, Rohit Kapoor said that the real estate market in India is expected to cross \$1 trillion by 2030. India's housing market has received investments worth \$30 billion from 2008 – 2020.

3. Research conducted by Crunchbase states that in the coming years more than 45% of the Indian population will live in metropolitan cities and urban areas. An average of 0.8 million houses is required every year to meet the demand of the top 5 cities comprising Mumbai, Bengaluru, Delhi, Pune, Noida. One of the reasons for the rising demands of homes is that the students enrolled in coaching institutes or pursuing higher education look for affordable rental accommodation in urban education hubs where they migrate for UG, PG courses.

4. A report by FCCI² predicts the housing market to increase at a whopping rate of 17% by 2023. National capital leading with a 40% expected growth rate by 2023 and Bengaluru following with 30%.

5. Current market players like Smart and Housing.com have a model of charging a commission. Former charges approximately 12.5% on every booking while the latter charges a hefty 16%.

6. Start-ups like No Broker though remove the broker from the equation, but their subscription plans are quite high. Around 70% of the revenue of No Broker comes from subscription plans.

2.1. Proposed System

- Easy Rental has been very meticulously designed to focus on the users' needs. Our application shows all the listings and allows potential tenants to sort and filter them based on multiple parameters like price, area covered, ratings etc.
- Looking for suitable property on Easy Rental is a smooth process. Owners listing their property provide the description of the property along with other details like rent, feature tags, and images. Home seekers can also add properties to their wish list for future reference.
- The tenant can book the property of their choice on any date as after it has already been agreed upon with the property owner, who has an option to accept or decline the booking. Once a booking has been made, the user can converse with the host through the website, for further discussion.

2.2. Goals and Objectives

We want the following features to be the highlight of our project and the customer should enjoy their booking or leasing experience:

1. Browsing properties and making a booking should be a quick and smooth process, as the booking is the core feature of our website.
2. Owners listing their property should provide the description, rent, feature tags, and images. They should also provide other details such as the location with details about the neighbourhood. They will be able to manage their rental properties easily.
3. Updating the property information such as location, services, photos, changing tags and description should be done regularly, to help home seekers to make the right choices.
4. The property owner will be able to accept or decline booking requests after going through the profile of the potential clients who have expressed their interest in the property. Upon accepting a request, the property owner will be able to communicate with the interested customer to decide and finalise the renting agreement and other necessary details through the website.

3. PROJECT PLANNING

This section covers the details of the project planning that was agreed upon and followed throughout the semester while developing the website.

3.1. Project Setup

- **Create Virtual Environment**

In the root directory run the command *pipenv shell* to activate the virtual environment.

- **Run the localhost server**

After creating the virtual environment run *python manage.py runserver* to run the localhost server.

- **Go to the website**

<http://127.0.0.1:8000/>

Table 1: Setup

#	Decision Description
1	Compatible on all operating systems - Windows 8, Mac, and Linux.
2	The standard code formatting practices have been followed.
3	The privilege to merge PRs has only been given to the project team members.
4	Pip Environment, Django version 2.2.5, Gulp, and NPM have been used

3.2. Stakeholders

Table 2: Stakeholders

Stakeholder	Role
Dr. Anurag Goswami	Mentor
Mr. Deepak Baid	Contributed to suggestion meetings
Ashish Binu	Tested our application
Ankit Agarwal	Team member
Dharmendra Sankhla	Team member
Kaustubh Kumar	Team member
Vaibhav Sethia	Team member

3.3. Project Resources

The following are the resources being used while developing Easy Rental.

Table 3: Resources

Resource	Resource Description	Quantity
SQLite Database	A database server was used with the Django application.	2
Capstone Team	Our team of students will be the primary developers of the project.	2
GitHub	VCS ³ for maintaining code repositories	1
MS Visual Studio Code	Code editor for installing the libraries, running server, and coding	2
WSL Workstation	A WSL workstation for using Linux command on Windows OS	2
Python Language	Python 3.6.9	2

4. SYSTEM ANALYSIS AND DESIGN

4.1. Overall Description

Some of the essential services provided are :

- Searching and filtering
 - Room booking
 - Cache synchronization services
 - Payment services
 - Messaging & reviewing
1. All the information related to booking is stored in the PostgreSQL database. The fluctuations in the database server mean that a user who booked the property will not be able to see the booking status.
 2. More users will use “search” than making a booking. We have made search efficient, ensuring that the failure of the search does not take down booking functionality.
 3. In-application calendar- These services will make it easy for the user to decide the date.

4.2. Users and Roles

We are a team of 4 members and have distributed the work equally between us.

Table 7: Team Members and Roles

User	Description
Ankit Agarwal	Worked on booking controller, owner section navigation, login, register form validation, logout user.
Dharmendra Sankhla	Worked on rental list manipulate state, calendar-date range picker, display booking confirmation in modal and UI improvements.
Kaustubh Kumar	Implemented search city request, rental layouts, editable components- image and tags. Created new owner section, and manage booking cards
Vaibhav Sethia	Implemented user model and controller, routing and validating booking, show rental owner, creating booking and handle edge cases,

4.3. User Stories (Requirements)

4.3.1. Product Backlog Items

ID	Feature name	Story points
5	List a property	3
4	Review section	2
10	Edit profile	3
17	Wishlist property	5
13	Search for an item	3
16	Payment	8
3	Chat service	5

SPRINT 1

Estimated User Story Points: 2

Actual Completed User Story Points: 2

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
100	Onset	<i>As a tenant, I want to be able to browse through the listed properties, So that I can find the best possible room for the least amount of money</i>	C	13	13	100%
Acceptance Criteria			Verification			
110	The user should be registered on the website database.		Create test cases to verify user credentials stored in the database.			
111	The search results should be relevant and should be satisfying the user's conditions.		Create test cases to verify the search result contains the matching keywords.			
112	The properties listed on the website should be linked to a registered property owner's account.		Create test cases to verify the owner of every listed property and no property should have an empty owner field.			
113	An acknowledgment email shall be sent to the user after expressing interest in renting a particular property.		Create test cases to verify sending of acknowledgement email after interested message is received.			
114	The user should have an option to review the terms of the renting agreement before finalizing it.		Create test cases to verify the visibility of terms and conditions of the rental agreement.			
ID	Tasks				Resource	
1	Develop backend connectivity with cloud database and make auth check when user opens the app, if the auth fails user would be redirected to login/signup page.				Ankit Agarwal	
2	Integrate the backend with the properties(to-let) section of database and display all the items in frontend in a seamless UI.				Dharmendra Sankhla	
3	Built a feature to filter search results based on the tags and keywords. Add a search bar and filter buttons which options to sort the data in order of different preferences.				Vaibhav Sethia	
4	Add an API to send emails to registered email ID's of both the tenant and property owners when user shows interest in a property.				Kaustubh Kumar	
5	Develop a screen to view the terms of contract and accept the terms and condition of the owner.				Dharmendra Sankhla	

SPRINT 2

Estimated User Story Points: 8

Actual Completed User Story Points: 8

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
200	Onset	<i>As a property owner, I want to upload images and details of my property So that I can attract potential tenants.</i>	C	6	6	100%
207		<i>As a tenant, I want to add my favorite rental houses to my wish list, So that I can make a quick booking when I wish to stay</i>	C	8	8	100
Acceptance Criteria			Verification			
210	The user should be able to list his/her property and provide description.		Create test cases to verify the description field is non-empty, amenities and facilities have been selected.			
211	The listed property and claims should be genuine.		Create a test case to match the property description with the rental agreement.			
213	The user should have an option to add/edit property photos and captions.		Create test cases to check the visibility of the photos on different screen sizes.			
ID	Tasks			Resource		
1	Develop an upload/add functionality using which the owner would list his/her property on the website. It should include fields to take various details like location, type, expected price, requirements etc.			Kaustubh Kumar		
2	Develop backend connectivity with cloud storage to upload the details in the database.			Vaibhav Sethia		
3	The developed function shall also include a verification technique which would verify the identity of the owner and the validity of the property being rented out using govt. sources.			Ankit Agarwal		
4	Built an edit/update + delete feature through which user can change details or un-list a property from the site.			Dharmendra Sankhla		

SPRINT 3

Estimated User Story Points: 55

Actual Completed User Story Points: N/A

Main User Story: “As the property owner, I want to sure be that the person showing interest in property is a genuinely interested so that I can ensure my property will be maintained properly.”

ID	Added	Description	Status	Story Points	Actual Equivalent Story Points	% Completed
300	Onset	<i>As a property owner, I want to be able to interact with potential tenants So that I can decide if they are trustworthy and suitable clients.</i>	C	10	10	100
311	Onset	<i>As a tenant, I want make online payment for rental room, So that I can confirm my booking.</i>	C	8	8	100
319	Onset	<i>As a tenant, I want update my profile information, So that the owner could find authentic information about me.</i>	C	6	6	100
Acceptance Criteria			Verification			
310	The user should be able to view the profile of interested potential tenants before initiating the discussion of terms and conditions.		Create a test case to check the whether the potential tenant has the profile view mode as public.			
311	The user should be able to block or ignore potential clients they deem as not suitable.		Create test cases to verify the response of accept and decline options.			
312	The user should be able to chat with the interested client securely, through the website and share images.		Create test cases to verify network security of the messaging window and the working of the image sharing button.			
ID	Tasks		Resource			
1	The payment system must be secure and thoroughly tested before release.		Vaibhav Sethia			
2	The chat service must be encrypted to protect the users' privacy.		Ankit Agarwal			

4.4. Design diagrams/ UML diagrams/ Flow Charts/ E-R diagrams

4.4.1. Use Case Diagram

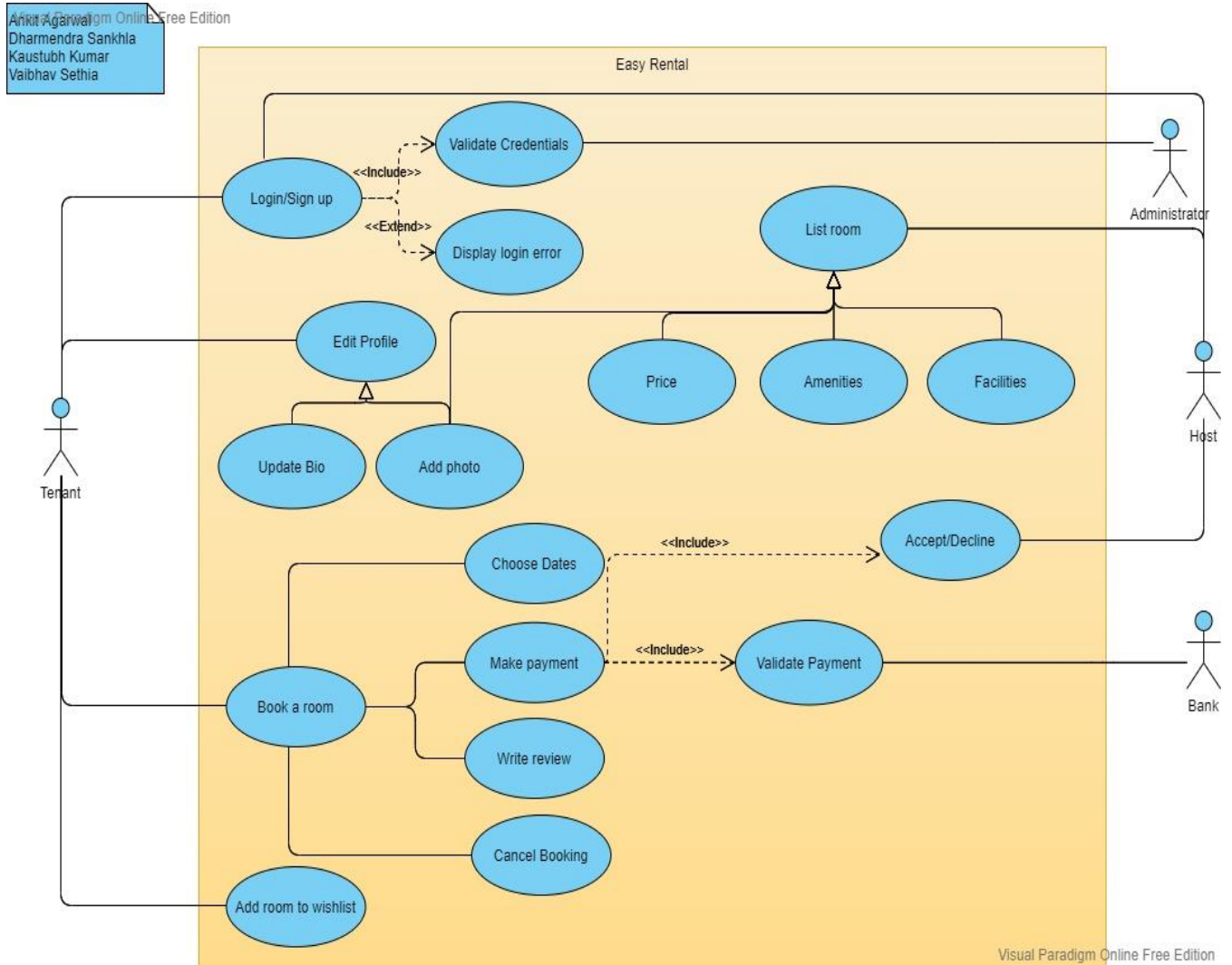


Figure 1: Easy Rental use-case diagram

4.4.2. Class Diagram

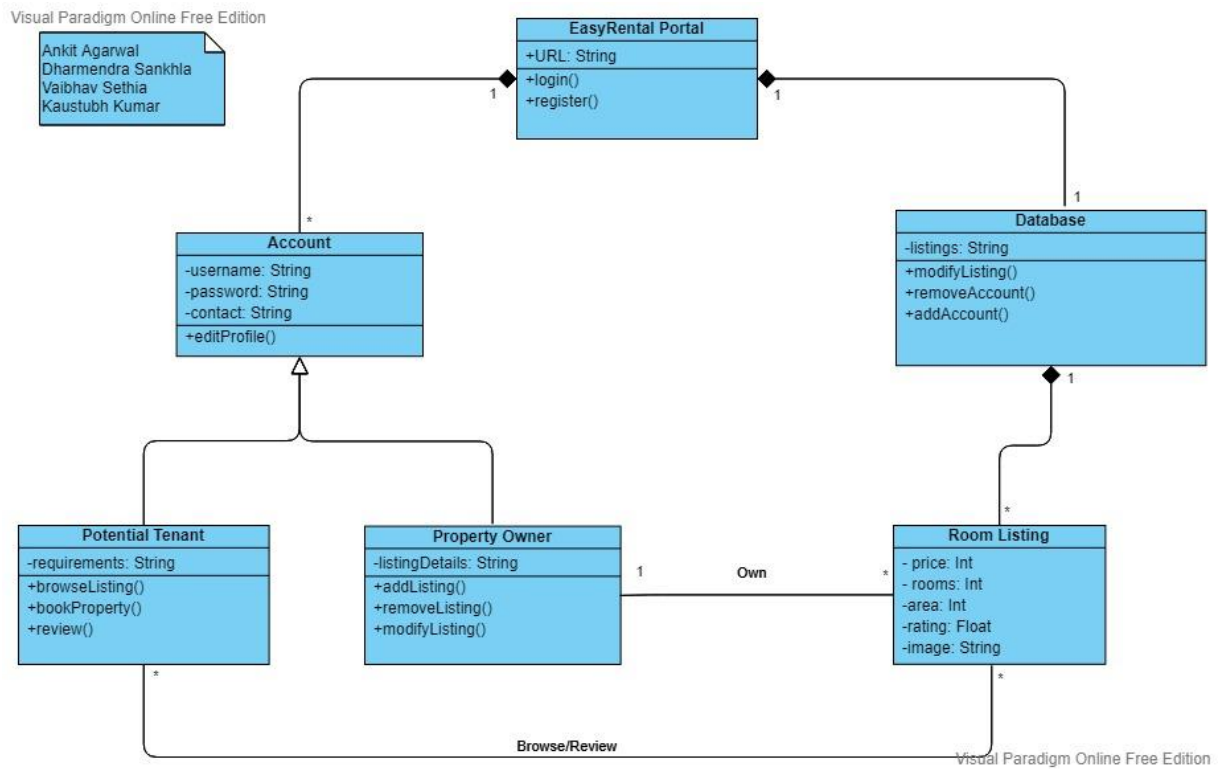


Figure 2: Easy Rental class diagram

4.4.3. Activity Diagrams

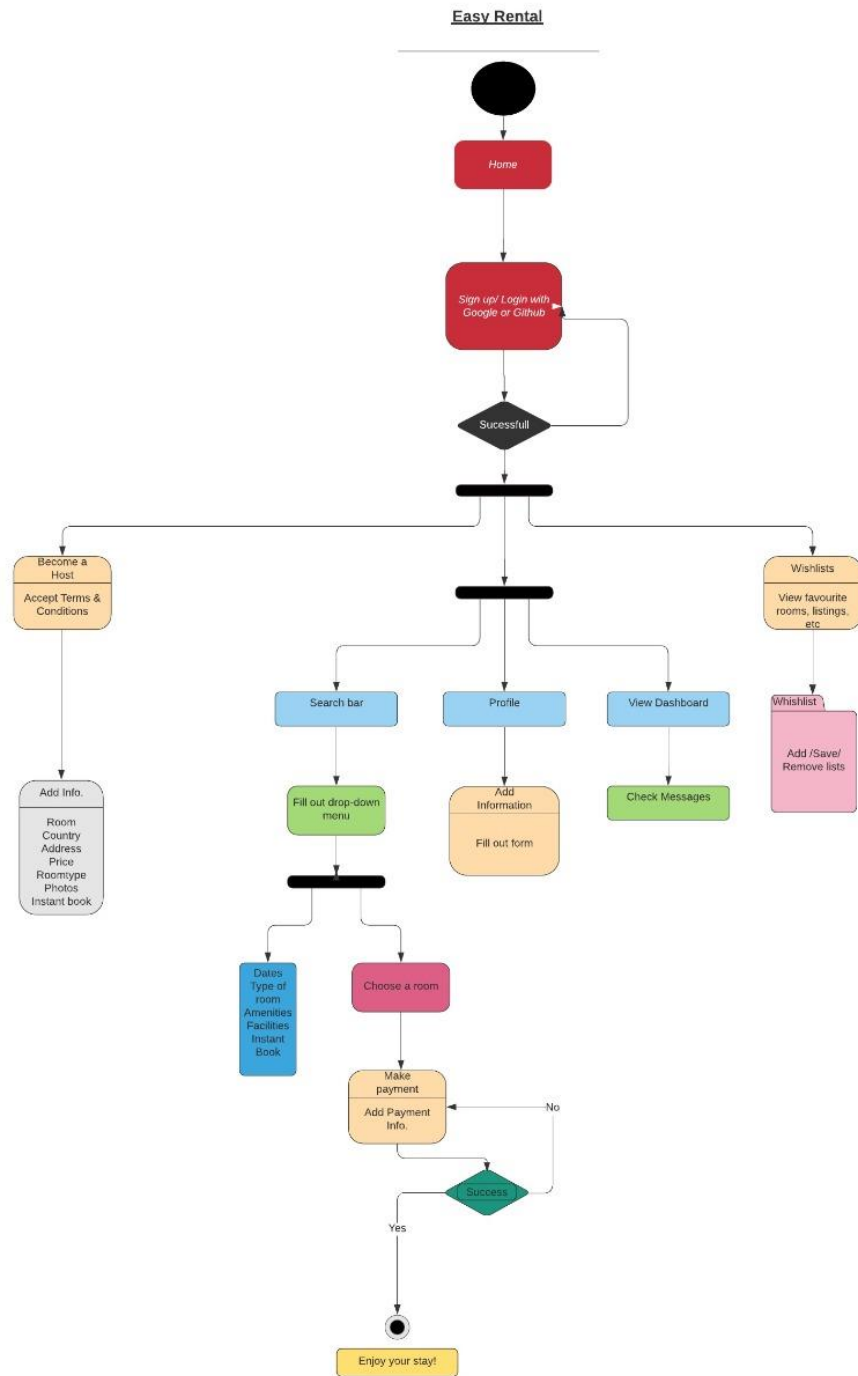
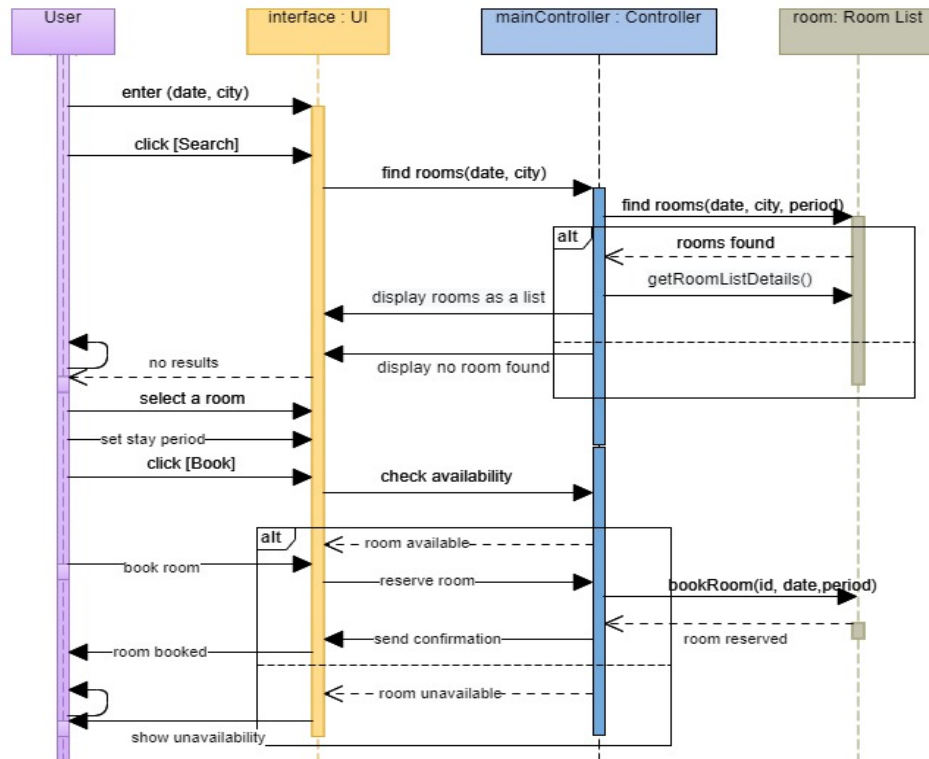


Figure 3: Easy Rental activity diagram

4.4.4. Sequence Diagram



Visual Paradigm Online Free Edition

Figure 4: Easy Rental sequence diagram