COMP 3059 – Capstone Project I

Software Requirements Analysis and Design Assignment

This assignment is an overview to gather the software needs with requirements analysis and help to proceed with the design.

The requirements analysis helps to break down functional and non-functional requirements to a basic design view to provide a clear system development process framework. It involves various entities, including business, stakeholders and technology requirements.

The design is the activity following requirements specification and before programming. Software design usually involves problem solving and planning a software solution.

To work on this assignment you could use the references and a sample template given below. The sample template can be customised to suit the nature of your project.

Reference Readings/Example:
http://www.uacg.bg/filebank/acadstaff/userfiles/publ_bg_397_SDP_activities_and_steps.pdf

www.cse.msu.edu/~chengb/RE-491/Papers/SRSExample-webapp.doc

https://nces.ed.gov/pubs2005/tech_suite/part_2.asp

Reference template:
www.tricity.wsu.edu/~mckinnon/cpts322/cpts322-srs-v1.doc

1.0 Introduction

1.1 Purpose

The purpose of this document is to provide a more detailed view on the AbroadStay Housing Application. This will include the features, scopes, goals and constraints of the whole applications. The document is intended for both the stakeholders and the active developers of the project.

1.2 Scope

- AbroadStay Housing will be first a mobile application aiming at local landlords and international students in the GTA area looking for a appropriate accommodation for their stay. The system will be designed for easy access and usage, time saving for both the landlords and the tenants.
- Specifically:
    - Landlords will find the process of advertising their property and receiving payments extremely convenient. They will need to register and create a landlord profile and go through a security and verification process before they start uploading their properties and rentals. The verification process is there to make sure out tenants are getting clean, genuine land owners.
    - Tenants on the other hand, will also need to create a tenant profile which will include reviews from the previous landlords as the Profile Checker for landlords. A capable search engine with filters will be provided so tenants can look for properties they would feel the most comfortable. The filters will include multiple aspects: distance, convenience, neighborhood and other specific criteria.
    - Payment will be made via the app, with AbroadStay Housing as the middleman to guarantee a successful deal between the two parties.
    - A database will be used as a storage to user profiles, properties profile as well as payment information.
- AbroadStay Housing hower, will not expand to a browser-based application yet. The application will also not include areas outside the GTA but will consider an expansion if the application grown enough.

2.0 System Overview

The System Overview section introduces the system context and design.

2.1 Project Perspective

AbroadStay Housing is inspired from international students, having gone through all the process of finding, trading information and essentially renting a property for their stay. The application is not new concerning the business model. However, it is a different approach to help students from all over the world coming the GTA area without having to go through complicated steps.

2.2 System Context

The context of AbroadStay housing is a small, compact application to find accommodation for students and list properties for tenants. A landlord will register and upload their properties as well as managing tenant issues during their stay. The tenant will come, enter a school or a location where they want to accommodate, interact with the owner and try to come to an

agreement with them. Payment will be set up via the app whether if it's a one time payment or a long term periodical payment. AbroadStay Housing team will manage the profiles, backgrounds of both parties to guarantee a genuine experience for both ends. We will also act as the middleman when it comes to payment, fast and reliable processing time for both parties convenience.

2.3 General Constraints

General Constraints identify any business or system constraints that will impact the manner in which the software is to be:

- Business constraints:
    - A web application will not be implemented due to not having enough time and resources.
    - AbroadStay Housing will not yet consider expanding until the demand grows over supply.
    - Lack of business knowledge will cause the initial business model not ideal
    - Lack of initial customer will be a problematic issue due to not having enough resources for advertisement
- System constraints:
    - UI design will not be top notch due to short of front end developers
    - Landlords verification process might be too complicated thus will not guarantee a clean profile for tenants.
    - Payment system will not be really convenient due to restrictions on programming end.
    - Interactive navigation system will not be implemented due to lack of resources

2.4 Assumptions and Dependencies

- Assumptions:
    - A promotion program will be needed at the start to build a user base.
    - Business model will be a to be solved problem due to not having a business people on the team
    - Properties will be lacking at the start due to not having enough connections with schools and landowners
    - The project will run at a deficit for at least 6 months, can be longer depending on a user base being build or not
    - At first, landlords verification process must be on site to guarantee a clean profile for first group of tenants
    - Front end developing process will face difficulties due to lack of resource and skills.
- Dependencies:
    - The success of the project will heavily depend on the consistency of developers.
    - A supervisor will be needed at the point of blockage
    - First batch of users will be the foundation for the success of the project, thus keeping them is essential
    - AbroadStay Housing must have a database as the information storage to keep the data flow smoothly

- Trust of users is also a difficult but must have dependencies of the project, especially at the start
- AbroadStay Housing will also need to rely on advertising and promoting campaign, at least at the launch.

3.0 Functional Requirements

This section describes specific features of the software project. If desired, some requirements may be specified in the use-case format and listed in the Use Cases Section.

3.1

- Tenant

- Search

Introduction	The tenant will search for an appropriate accommodation for their stay
Inputs	The tenant enter a location or school name
Processing	The system search for properties that match the criterias provided
Outputs	A list of properties that match the criterias

- Register

Introduction	The user will register for an account/profile to start using the application
Inputs	Personal information, intention of account(tenant or landlord)
Processing	The system will save the information, create an account according to information provided, send a confirmation email
Outputs	A newly created account with full functions

- See detail

Introduction	The tenant choose a property after their search to see detailed information
Inputs	On click
Processing	The system take details of the specified property and present it to the tenant
Outputs	Detailed information of the property

- Communicate

Introduction	The tenant open a chat with the landlord and start communicating
Inputs	On click
Processing	The system will create a dialogue for both parties to communicate in
Outputs	Chatlogs

- Book a property

Introduction	The tenant will book the chosen property and delivered to payment process
Inputs	On click
Processing	The system pull details about the property including price, durations, owners profile After that if a payment was made, the system receive the money, reserved the listed property and notify the landlord about the booking
Outputs	Details page and payment processing Booking created

- Property review

Introduction	The tenant will have the ability to rate their tenant after the period of their stay at the property for future references or future potential tenants
Inputs	Reviews
Processing	The system will review the feedback, verify through different algorithm and the tenant themselves. Then attach/detach it to the landlord/property profile
Outputs	Landlord profile review

- Land lord

- Register

Introduction	The user will register for an account/profile to start using the application
Inputs	Personal information, intention of account(tenant or landlord)
Processing	The system will save the information, create an account according to

	information provided, send a confirmation email
Outputs	A newly created account with full functions

- List a property

Introduction	The landlord will list their property onto the application for advertising
Inputs	Property pictures, information, availabilty
Processing	The system will save the information, create a listing for the property uploaded
Outputs	A new listing on the application

- Accept/Decline a booking

Introduction	The landlord will receive bookings from tenants and come to a decision
Inputs	Yes/No
Processing	The system deliver a booking for this specified property, ask for availability verification and in the end transfer the payment
Outputs	Agreement decision, payment transfer/refund

- Communicate

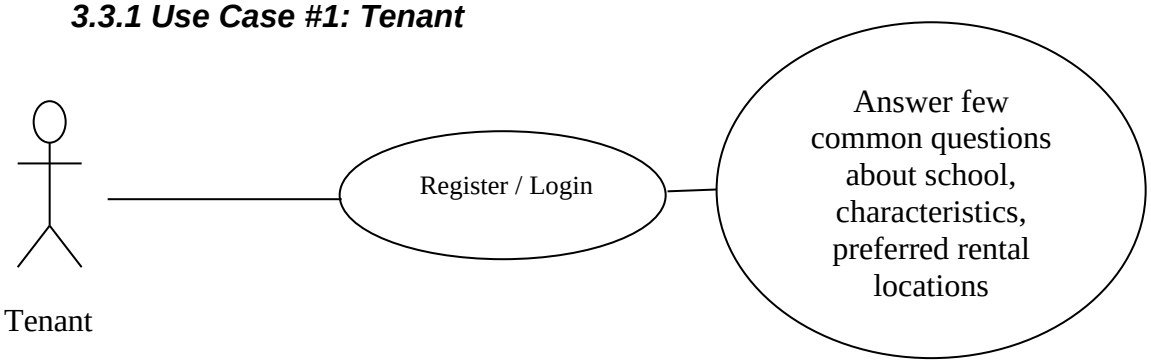
Introduction	The tenant open a chat with the landlord and start communicating
Inputs	On click
Processing	The system will create a dialogue for both parties to communicate in
Outputs	Chatlogs

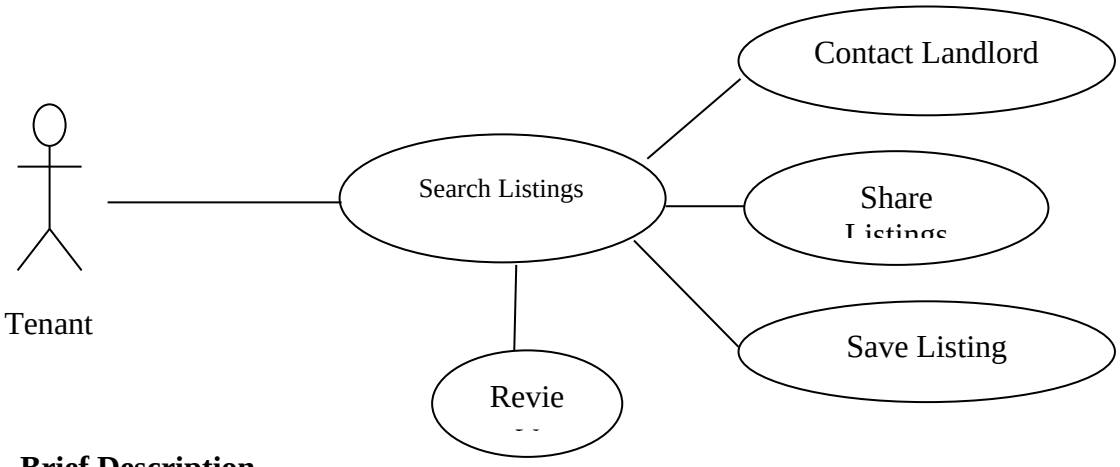
- Tenant feedback

Introduction	The landlord will have the ability to rate their tenant at any time after the agreement for future references or future landowners that potentially get the tenant
Inputs	Reviews
Processing	The system will review the feedback, verify through different algorithm and the tenant themselves. Then attach/detach it to the tenant profile
Outputs	Tenant profile review

2.2 Use Cases

3.3.1 Use Case #1: Tenant



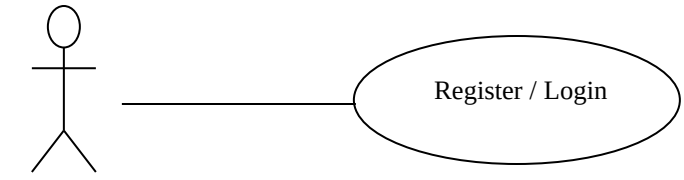


Brief Description

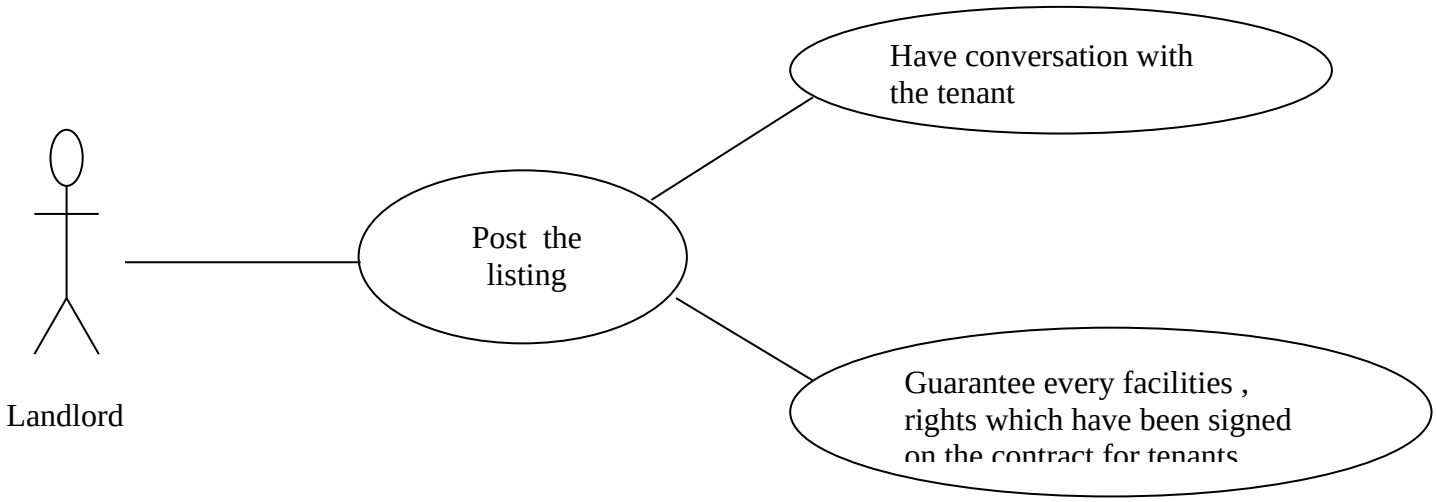
The Tenant registers or logins to the app, then answer few common questions about school, characteristics, preferred rental locations so the system will be able to list all listings which meet the demands of tenants

The tenant will search and choose the listing, after carefully look at every details of the rents, rules, policies applied, rate, reviews, etc.. he/ she will choose either immediately contact landlord to get more information or save for later. They can share that listing with other people

The tenant can share their reviews on the listing's page.



2.2.1 3.3.2 Use Case #2: Landlord

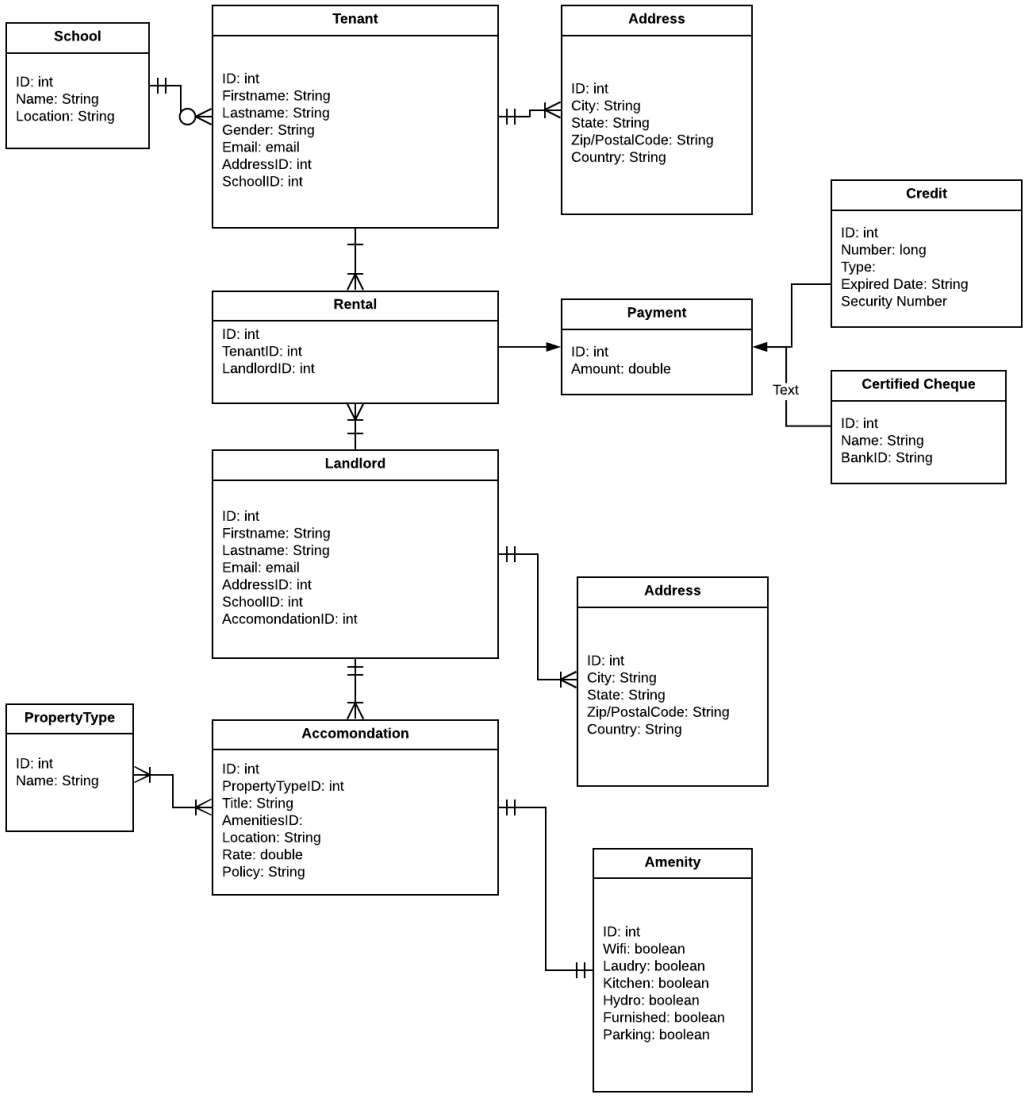


Brief Description
The Landlord registers or logins to the app, then will post the listings after step by step choosing the property types, locations, availability of amenities, images, rate and policies applied.

The Landlord will accept the chat request from the tenants and be able to get the video call and text tenants. The Landlord must be responsible for every amenities, rights, etc which have been posted by themselves

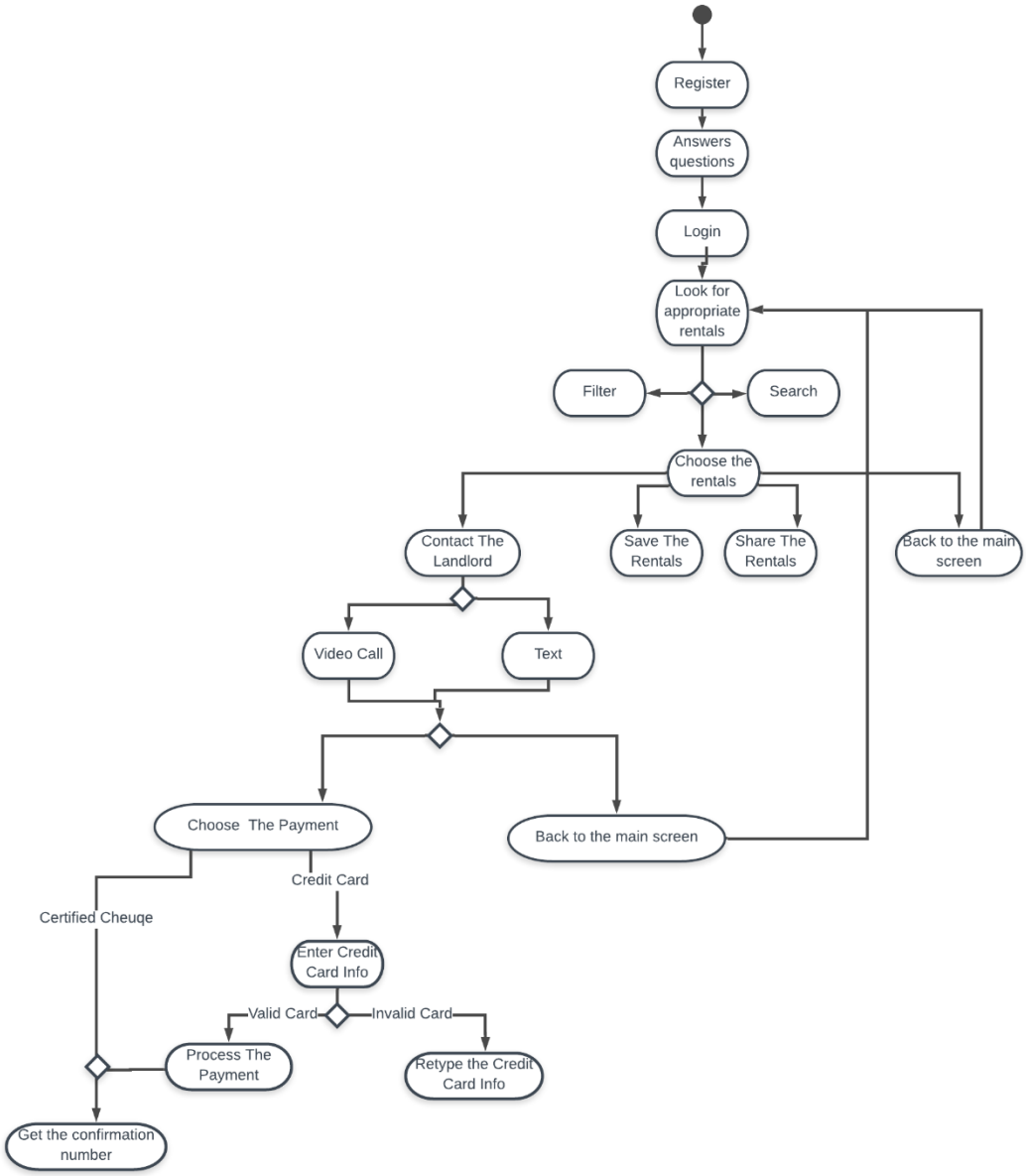
3.3 Data Modelling and Analysis

- Normalized Data Model Diagram

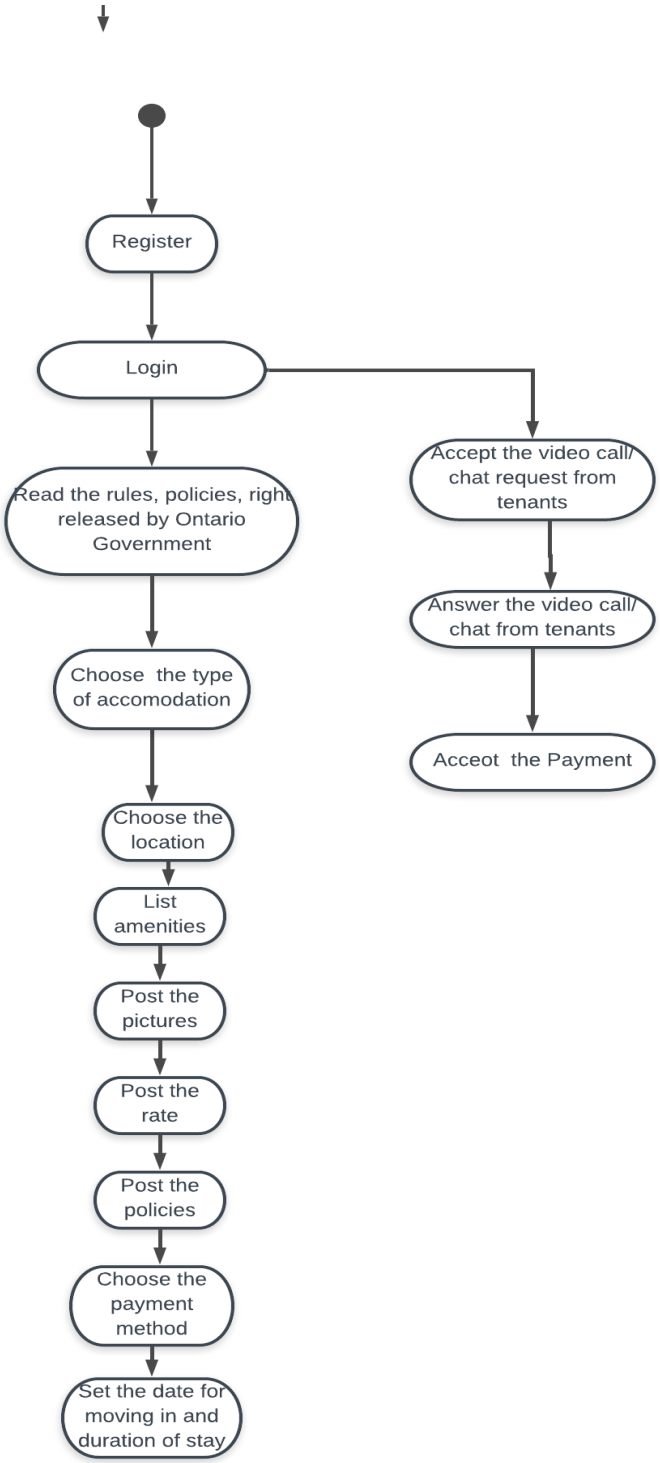


- Activity Diagrams

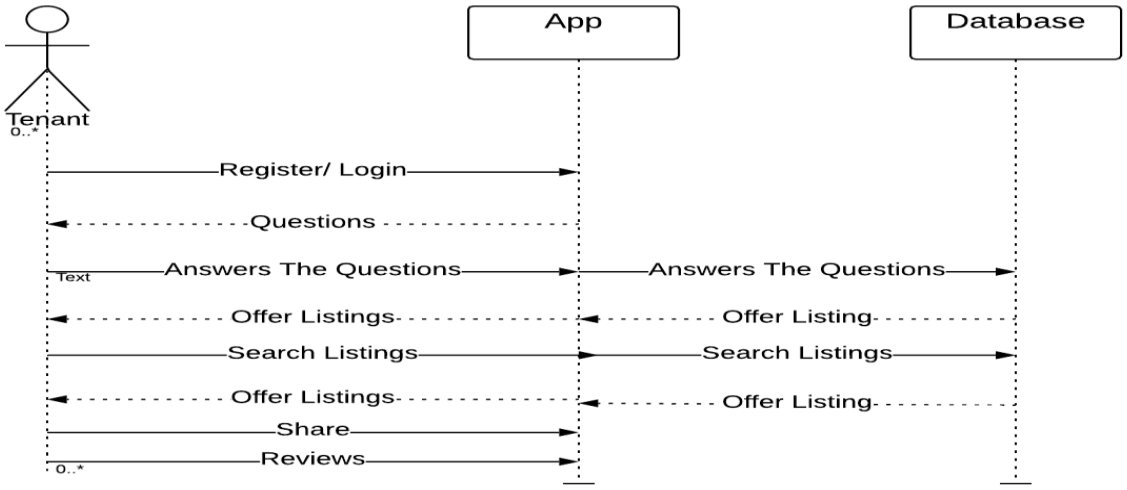
Tenants:

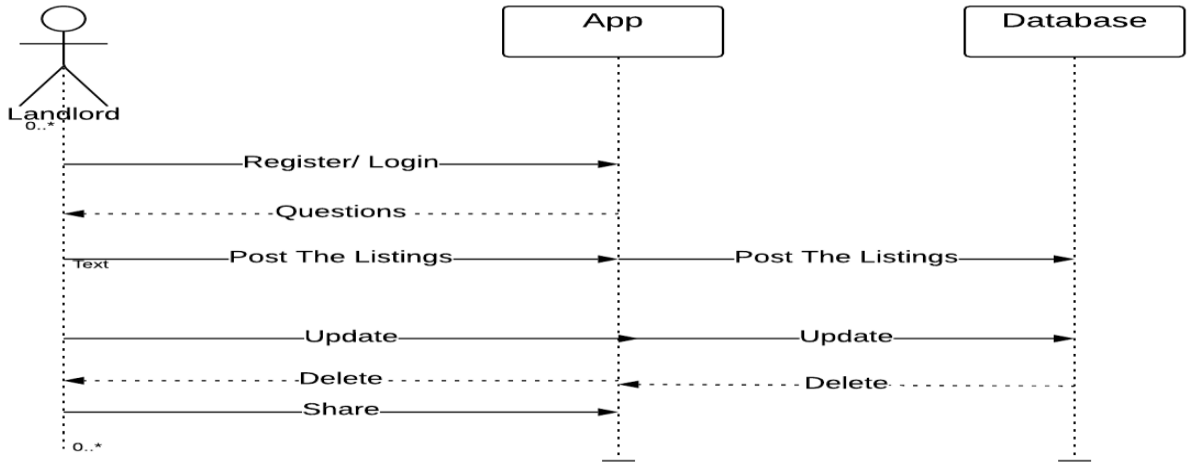


Landlord:

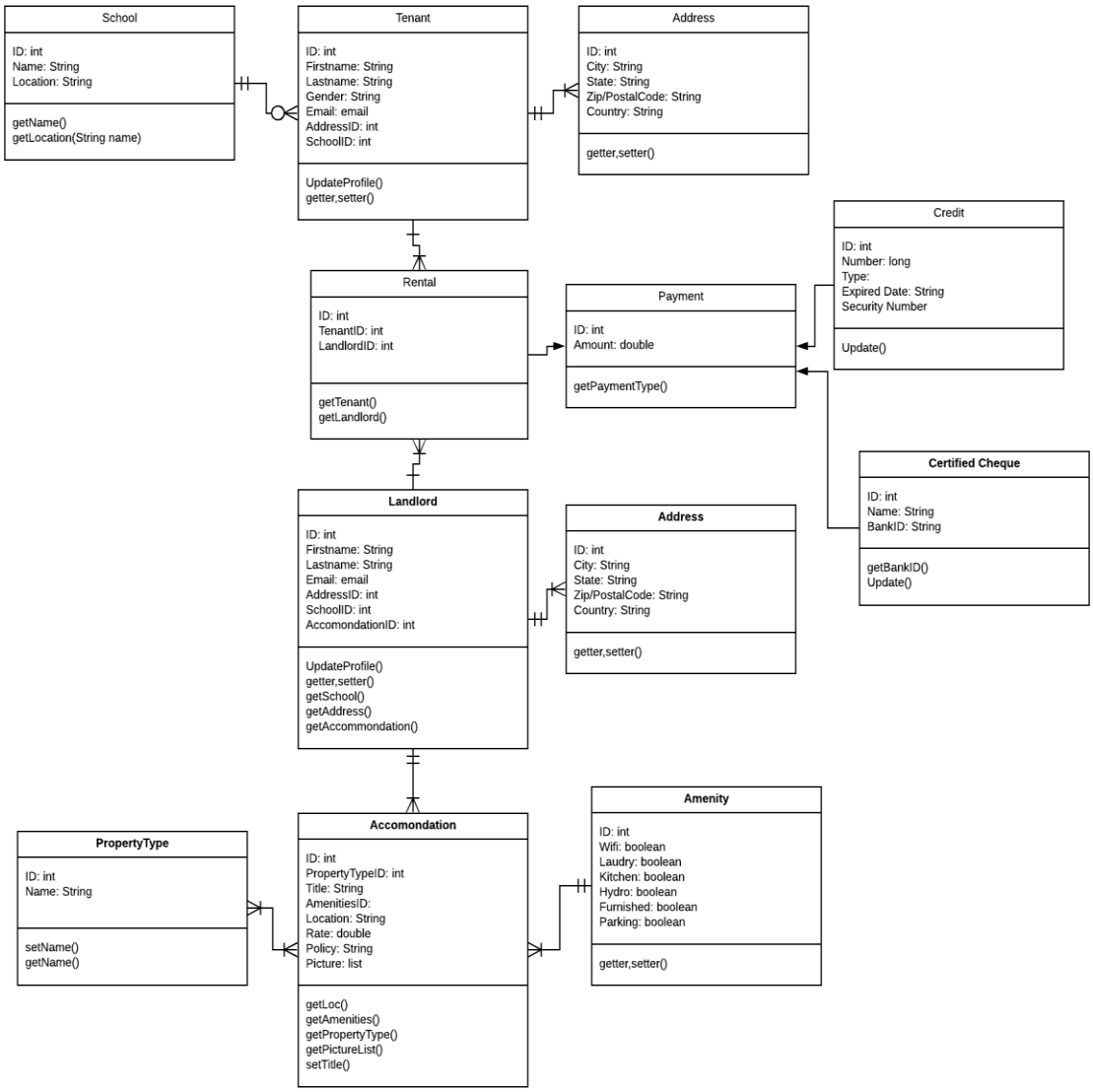

Register
Login
Read the rules, policies, right released by Ontario Government
Choose the type of accomodation
Choose the location
List amenities
Post the pictures
Post the rate
Post the policies
Choose the payment method
Set the date for moving in and duration of stay
Accept the video call/ chat request from tenants
Answer the video call/ chat from tenants
Acceot the Payment

- Sequence Diagrams





- **UML Class Diagram**



3.4 Process Modelling

- Data Flow Diagram

4.0 Non-Functional Requirements

- Performance:
  - The server of the system must reach 99.9% uptime.
  - Search and filter system must have high accuracy regarding: distance, convenience, neighborhood
  - Search algorithm must be time optimized, ideally under 2 seconds.
  - Bug free on important features: browsing, listing, booking,…

    - Communication tools must not have too many details and not use more than 10% resource of the application
- Reliability:
    - Registration and verification must not take more than 10 minutes of users.
    - User help request must be answered under 24 hours
    - Properties listed must match 100% reality
    - System at the start have to at least handle 50 concurrent users
    - Accurate navigation system
- Availability:
    - Must be ready to be downloaded at anytime
    - Properties must be available at anytime for any potential tenants
    - At least a 12 hour customer service department
    - Payment must always be available
- Security:
    - Email verification after registration to prevent spams
    - Registration information of both parties are private
    - Database authentication system
    - Only one DBA
    - Restrictions on write access
    - No read access limitation
- Maintainability:
    - Ability to debug without having to shut down the server nor application
    - Gather bugs by a bug report form
    - Debugs must take at max 1 hour for minor bugs and 6 hours for major bugs
- Portability:
    - Browser port must be available after a year maximum
    - iOS port after 1000 concurrent user

5.0 Logical Database Requirements

Table	Data
role	admin,dev,tenant,landlord
tenant_profile	name, dob, role
landlord_profile	name, address, dob, role
booking	tenant,landlord,payment,date,duration
property	landlord, address, school, price, availability
payment	booking,date,amount,ongoing
Internal_user	name,role
school	name,address

6.0 Other Requirements

Additional requirements, if any.

7.0 Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
Project Lead	Quang Minh Tran	Quang Minh Tran	11.11.2019
Head Developer	Chi Anh Bui	Chi Anh Bui	11.11.2019
Developer	Thien Phuoc Dang	Thien Phuoc Dang	11.11.2019