

# Student Study Areas System

## Planning Document

Team 6

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## **Student Study Areas System Vision Statement**

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The Student Study Areas System (SSA) is designed to help York University students efficiently find the most suitable study areas on campus. The system will maintain detailed, real-time information on study spaces and provide personalized insights to enhance student academic experiences at YorkU.

Primarily aimed at York University students who need guidance in choosing their study environment, the SSA will allow students to view information on study areas, including seat availability, student ratings, cleanliness, and busyness. This information will be easily accessible, and students will be able to search for and filter specific study spots.

The system will feature a review and rating system, enabling students to write and read reviews about specific study areas. These reviews will provide insights into various amenities, such as available outlets and suitability for studying or socializing. Students will also receive personalized recommendations based on their study preferences and past ratings.

Additionally, students can view and locate study spaces on campus using a map display that marks study areas and provides detailed directions, including landmarks and indoor paths. This will help students easily find study spots close to their classes using familiar reference points.

Envisioned as a web application, the SSA will use real-time data. In the pre-release version, it will incorporate actual map data from platforms to provide accurate information on locations and details of study areas. Future versions of the system will be networked with the client to gather personal opinions and insights on study areas they have visited, further refining the accuracy of the information provided.

The SSA will be a significant improvement over current systems, which offer limited information on study areas and do not provide personalized recommendations based on user's preferences. The SSA will help students efficiently locate study areas that meet their preferences, reducing the time spent deciding where to go. By combining data on study areas and student preferences, the system will substantially benefit students' academic experiences, saving time and optimizing their study or socializing time.

The system's success will be evaluated based on two main criteria: adoption rates and user satisfaction. This will be measured by the number of active users and the volume of ratings and reviews. Additionally, positive feedback from the client and general student users will further validate the system's effectiveness.

# User Story Map

## Big User Stories Outline, Iteration 1:

Find study spaces on campus	
As a student, I want to be able to find possible study spaces available on campus.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

View study space information	
As a student, I want to be able to view real-time information regarding specific study spaces.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

Rate and read reviews of study spaces	
As a student, I want to be able to rate the study spaces and know what my classmates are thinking about them.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

## Detailed User Stories Outline, Iteration 1:

Map display	
View a map of the entire campus with specific study places marked on it by pins.	
Priority: <b>High</b>	Cost: <b>X day</b>
Big Story: <b>Find study spaces on campus</b>	Team Member: Ngoc Phuc Khang Nguyen

Specific study place directions	
Get detailed directions, including landmarks and indoor paths, to specific study places.	
Priority: <b>High</b>	Cost: <b>1 day</b>
Big Story: <b>Find study spaces on campus</b>	Not completed in ITR1

Narrow down search area	
Narrow down the study space search areas on the map.	
Priority: <b>Low</b>	Cost: <b>1 day</b>

Big Story: <b>Find study spaces on campus</b>	Not finished in ITR1
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<b>Display study area amenities</b>	
View study areas' basic amenities, including charging outlets, cleanliness, and accessibility, and loudness, location.	
Priority: <b>Medium</b>	Cost: <b>1 day</b>
Big Story: <b>View study space information</b>	Team Member: Kimberly Bonilla

<b>Display busyness of study areas</b>	
Determine how busy each area on campus is.	
Priority: <b>Medium</b>	Cost: <b>2 day</b>
Big Story: <b>View study space information</b>	Team Member: Emma Accardi

<b>Write and display study space ratings</b>	
Allow students to write their ratings about specific study spaces and view other students' ratings.	
Priority: <b>Medium</b>	Cost: <b>2 days</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Not finished in ITR1

Release 0

## Customer Meeting Summary:

Date: **Wednesday, January 22, 2025**

Customer: **Nica Riccardi (Urban Planning Student @York University)**

Length: **20 Minutes**

Discussion: [Interview 1: Base Discussion with Customer](#)

## Big User Stories:

### View Study Space Information

As a Student, I want to be able to view real-time information regarding specific Study Spaces.

Priority: High

Cost: 2 Weeks

### Find Study Spaces on Campus

As a student, I want to be able to find possible study spaces available on campus.

Priority: High

Cost: 2 Weeks

### Rate and Read Reviews of Study Spaces

As a student, I want to be able to rate the study spaces and know what my classmates are thinking about them.

Priority: High

Cost: 2 Weeks

## Detailed User Stories

### Narrow Down Search Area

Narrow down the space search areas on the map.

Priority: Low

Cost: 1 day

### Specific Study Place Directions

Get detailed directions, including landmarks and indoor paths, to specific study places.

Priority: High

Cost: 1 day

## Map Display

View a map of the entire campus with specific study places marked on it by pins.

Priority: High

Cost: X day

## Write and Display Study Space Ratings

Allow students to write their ratings about specific study spaces and view other students' ratings.

Priority: Medium

Cost: 2 days

## Display Busyness of Study Areas

Determine how busy each area on Campus is.

Priority: Medium

Cost: 2 days

## Display Study Area Amenities

View study areas' basic amenities, including charging outlets, cleanliness, and accessibility.

Priority: Medium

Cost: 1 day



## Big User Stories Outline, Iteration 2:

Big user stories remained the same from ITR1 to ITR2. The goals of our app for Iteration 2 have remained the same.

Find study spaces on campus	
As a student, I want to be able to find possible study spaces available on campus.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

View study space information	
As a student, I want to be able to view real-time information regarding specific study spaces.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

Rate and read reviews of study spaces	
As a student, I want to be able to rate the study spaces and know what my classmates are thinking about them.	
Priority: <b>High</b>	Cost: <b>2 weeks</b>

## Detailed User Stories Outline, Iteration 2:

Specific study place directions - Leftover from ITR1	
Get detailed directions, including landmarks and indoor paths, to specific study places.	
Priority: <b>High</b>	Cost: <b>1 day</b>
Big Story: <b>Find study spaces on campus</b>	Team Member: Jericho Marc Mendoza

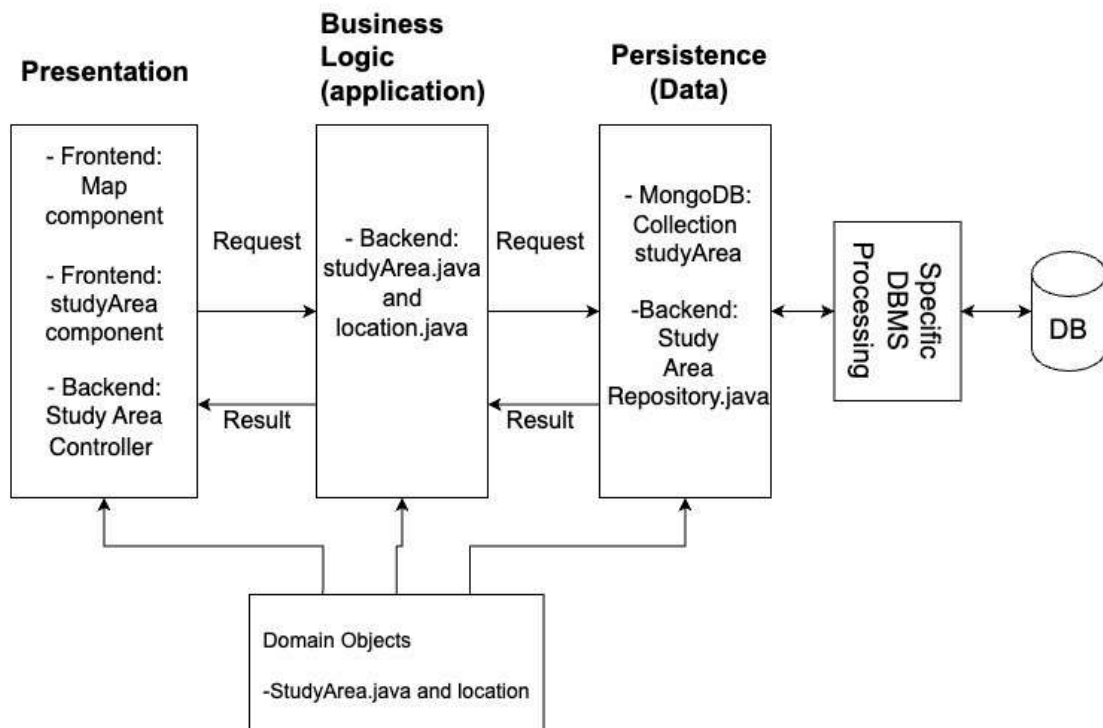
Narrow down search area - Leftover from ITR1	
Narrow down the study space search areas on the map.	
Priority: <b>Low</b>	Cost: <b>1 day</b>
Big Story: <b>Find study spaces on campus</b>	Team Member: Ashley Thong

Write and display study space ratings	
Allow students to write their ratings about specific study spaces and view other students' ratings.	
Priority: <b>Medium</b>	Cost: <b>2 days</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Not completed in ITR2

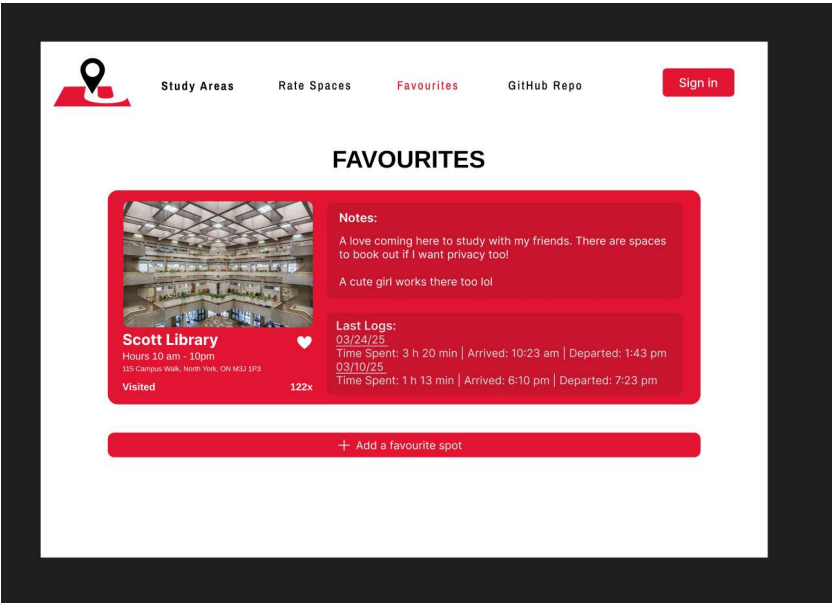
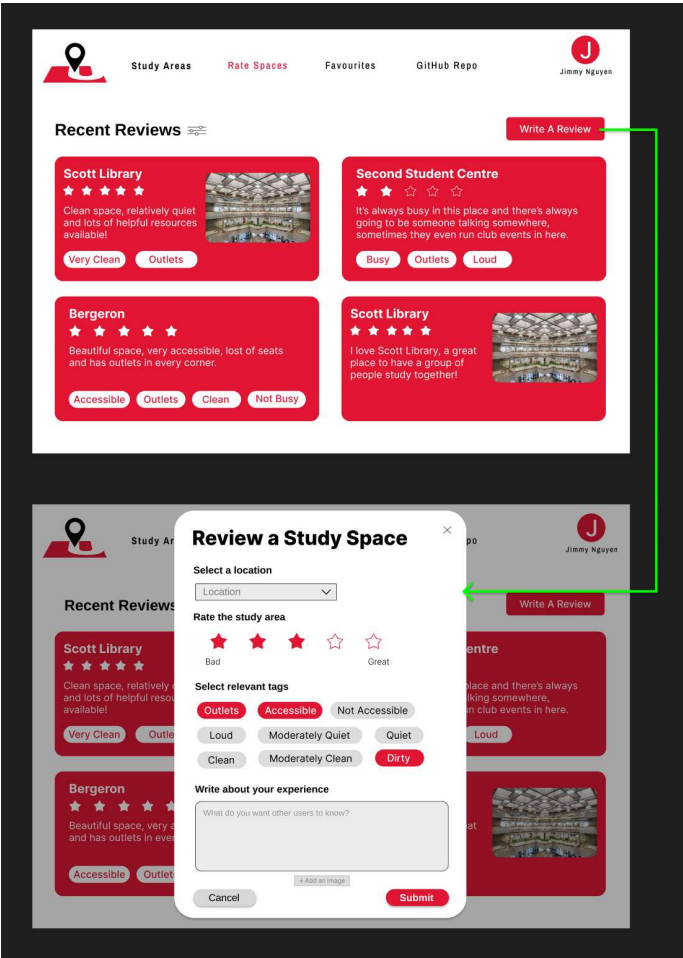
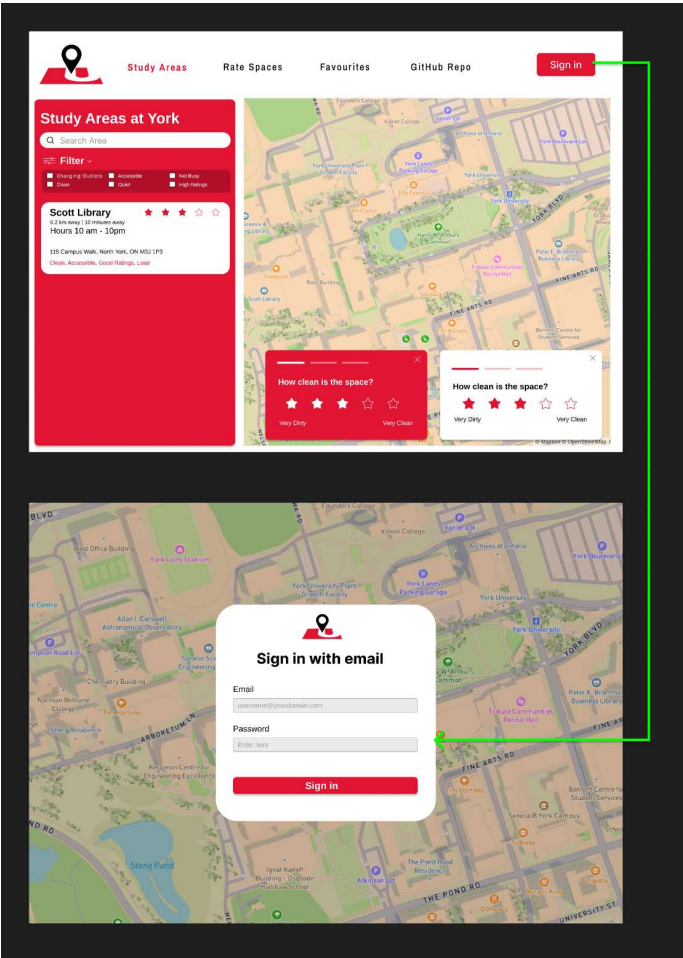
## StudyWith-York-U 3-layer software architecture

1. **Presentation Layer:** Handle interaction with User (GUI). Includes all of the frontend components like the map and studyArea components.
2. **Business Logic:** Validation and processing data (calculations, business logic). Includes backend studyArea.java (model) and the location class in the model.
3. **Persistence:** Manage database operations like retrieving, updating and deleting data. Includes studyArea collection in MongoDB and backend studyAreaRepository.java to manage database operations (GET,POST, DELETE...), and backend studyAreaRepository.java. Handles database operations (MongoDB)

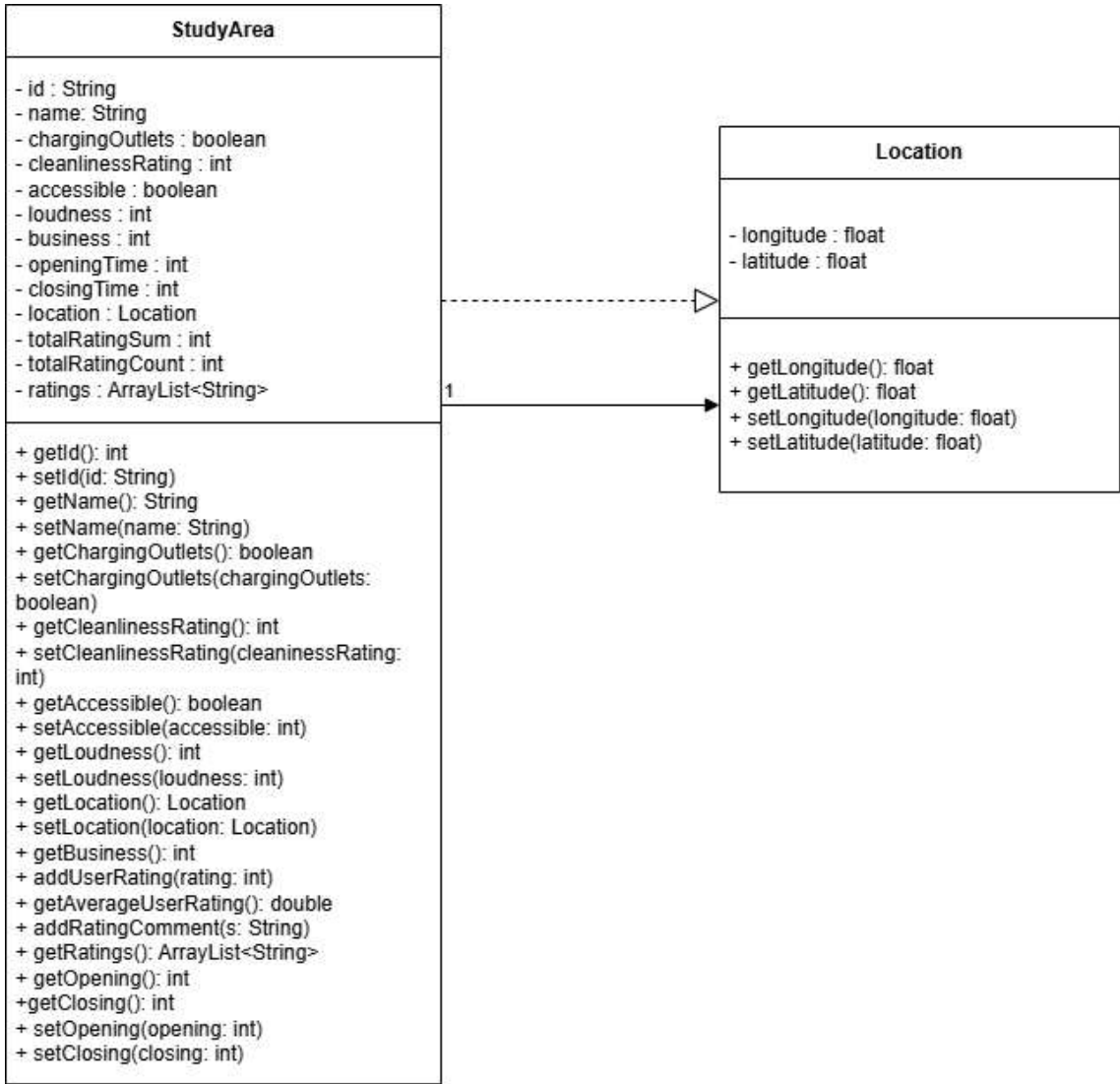
## StudyWith-York-U 3-layer software architecture



# Website Mockup



UML Class Diagram



Detailed User Stories Outline, Iteration 3:

Write Reviews of Study Spaces	
Leave reviews from others about the different study spaces on campus	
Priority: <b>High</b>	Cost: <b>2 days</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Team Member: Ngoc Phuc Khang Nguyen

Login Page	
Sign into a personalized user account	
Priority: <b>High</b>	Cost: <b>1 day</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Team Member: Kimberly Bonilla

Read Reviews of Study Spaces	
Read reviews from others about the different study spaces on campus	
Priority: <b>High</b>	Cost: <b>2 days</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Team Member: Ngoc Phuc Khang Nguyen

Sign Up Page	
Make a personalized user account	
Priority: <b>High</b>	Cost: <b>1 day</b>
Big Story: <b>Rate and read reviews of study spaces</b>	Team Member: Kimberly Bonilla

Set favourite study spaces	
Use an account to set favourite places for easy access	
Priority:	Cost: <b>2 day</b>
Big Story: <b>Find study spaces on campus</b>	Team Member:

Navigation bar	
Make a navigation bar for easy transition between pages	
Priority: <b>Medium</b>	Cost: <b>1 day</b>
Big Story: <b>Find study spaces on campus</b>	Team Member: Jericho Marc Mendoza

View favourite study spaces	
Use an account to view favourite study spaces	
Priority:	Cost:
Big Story: <b>Find study spaces on campus</b>	Team Member: Kimberly Bonilla

View Addresses of Study Places	
Display and allow users to see the exact address of the study space	
Priority: Medium	Cost: 1 day
Big Story: <b>Rate and read reviews of study spaces</b>	Team Member: Emma Accardi

## Refactoring Document, Iteration 3:

Old Design/Problem	<ul style="list-style-type: none"> <li>- Study area format was not ideal</li> <li>- Caused click offset on map as well</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Updated map and study area visuals</li> <li>- Removed old design elements</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Much better user experience</li> <li>- Fixed offset issue</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- Getting directions was unintuitive</li> <li>- Didn't work with real database</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Implemented visual response</li> <li>- Synced stub and database info</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Intuitive directions</li> <li>-</li> </ul>

Old Design/Problem	Issue: If the API request fails, there is no error handling, which could cause the entire function to break.
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Refactoring Done	Potential fix: Wrap the fetch call inside a try-catch block.
New Design	Avoid function to break

Old Design/Problem	<ul style="list-style-type: none"> <li>- Lack of type safety for property "map". The map property is typed as any, which reduces type safety.</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Use mapboxgl.Map as the property's type instead: map!: mapboxgl.Map;</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Increase type safety</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- Incorrect RouterLink usage applied to the button. The &lt;button&gt; element doesn't support routerLink directly.</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Since we do not need routerLink here, we can remove it altogether.</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Will support routerLink directly</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- Opening hours filter does not provide any meaningful details for the user and may be unnecessary.</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Include more switch cases in filterByCategory() to include Morning, Afternoon and evening hours.</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Intuitive for user</li> <li>- Remove unnecessary code</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- The filtering logic for searching a study area filterStudyAreas() and filtering a study area based on their categories</li> </ul>
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	filterByCategory(category: filterCaterogy)have similar logic (duplicate code).
Refactoring Done	<ul style="list-style-type: none"> <li>- Combine the filtering function (filterByCategory() method) and the search logic (filterStudyAreas() method) into one function</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Eliminate redundancy</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- The rating system for loudness and cleanliness is not well-defined or explained within the code or the GUI.</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Add a label with description in the GUI to explain how the loudness and cleanliness rating are evaluated.</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- More user friendly and clear</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- Lack of error handling in StudyArea(String name, boolean chargingOutlets, int cleanlinessRating, boolean accessible, int loudness, Location location, int openingTime, int closingTime, int business)</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- Add an IllegalArgumentException handling for busyness that checks for inputs that are greater than 5 and less than 1.</li> </ul>
New Design	<ul style="list-style-type: none"> <li>- Handle exceptions correctly</li> </ul>

Old Design/Problem	<ul style="list-style-type: none"> <li>- Unclear method naming for addBusynessRating. Without context, the method name can be confusing. For example, it could mean it is adding a busyness rating to something or adding the rating number to the busyness rating.</li> </ul>
Refactoring Done	<ul style="list-style-type: none"> <li>- A method name like "incrementTotalBusynessRating"</li> </ul>



	clarifies what the method does.
New Design	- Adds clarity

Old Design/Problem	- Using both “Busyness” and “Business” is confusing and can cause a developer to think they represent and refer to different things in the code. Also, “Business” doesn’t mean busy.
Refactoring Done	- Change every use of “Business” to “Busyness”.
New Design	- Eliminates redundancy and confusion

Old Design/Problem	- Login Page shows Old Map design in background
Refactoring Done	- Changes map image of both register and login page
New Design	- Consistency