

# CoLearn Project Report

Onur Demirkale 2020719180

**Course:** SWE.573 2022S

**Git Repository:**

<https://github.com/Rhonur/bounswe573-2022>

**Git Tag Version:** v0.9

**Deployment URI:**

<http://ec2co-ecsel-1us90618ebhuf-31633754.eu-central-1.elb.amazonaws.com>

## HONOR CODE

**Related to the submission of all the project deliverables for the Swe573 2022 Spring semester project reported in this report, I, Onur Demirkale declare that:**

- I am a student in the Software Engineering MS program at Boğaziçi University and am registered for Swe573 course during the 2022 Spring semester.
- All the material that I am submitting related to my project (including but not limited to the project repository, the final project report, and supplementary documents) have been exclusively prepared by myself.
- I have prepared this material individually without the assistance of anyone else with the exception of permitted peer assistance which I have explicitly disclosed in this report.

Onur Demirkale

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## 1.0 Credentials

**Django Admin credentials of the deployed application:**

- Username: root
- Password: 2500

**Environment variables to be used with the Dockerfile:**

- DB\_NAME=postgres
- DB\_USER=swe573
- DB\_PASSWORD=y4dhbl9knpdqH3dUT45g
- DB\_HOST=swe573-db.cviuxg4f9dot.eu-central-1.rds.amazonaws.com
- PORT=5432
- SECRET\_KEY=w314139jdeahd
- ALLOWED\_HOSTS=\*
- DEBUG=1

## 2.0 Overview

The aim of this project was to establish a cooperative learning environment in which users can learn and share knowledge in a web application setting for those who get a thrill from learning and sharing knowledge. The basic functionality of the intended application has been achieved. Users are able to sign up, sign in, navigate the web application, create and edit learning spaces, post questions and answers, view and edit their profiles and explore other learning spaces. However, more advanced functionalities of the application has not been achieved as specified in status of requirements in section 5.1. The web application is not able to provide dynamic feedback to the users depending on their input and core functionalities such as chatting and creating quizzes has not been implemented due to delays in the development.

During the development of this project, Docker-Compose has been used as a development tool to create an independent development environment. Through Docker-Compose, it is possible to run the web application inside a container and a database inside another container simultaneously. Since networking is handled by Docker-Compose, the developer didn't need to worry about setting up a local database in their local development environment and manage its dependencies.

Git version management system has been extensively used. The commits have been targeted to reflect a change in a single file that relates to the development or enhancement of a single feature. Issue management system of GitHub has been used to track issues and milestones. Projects feature of GitHub was used as a Kanban board to follow status of issues.

During the deployment of this project, a Dockerfile has been implemented for the Django application. The Dockerfile has been used to build an image of the Django application. The built image was then published to Amazon Elastic Container Registry (ECR) which servers as a Docker image repository. Then, a public Postgres database instance has been created on the Cloud through Amazon Relational Database Service (RDS). After ensuring that the Django application running inside a local container was able to communicate with this public RDS instance, the Django application was deployed using Amazon Elastic Container Service (ECS) through its Fargate option. ECS is a container management service and its Fargate option allows to deploy containers in a serverless manner. The load balancer for the Django application was automatically set up by the ECS. The deployment of the Django application can be improved by setting up another container in the ECS cluster to serve a reverse proxy for static assets for the Django application or by serving static assets from the Simple Storage Service (S3) of AWS .

## **3.0 Software Requirements Specification**

### **3.1 Functional Requirements**

#### **3.1.1 Sign Up, Sign In**

- An unsigned user shall be able to browse learning spaces.
- An unsigned user shall be able to register an account providing a valid e-mail and a password.
- An existing user shall be able to login to their account using their defined e-mail and password.
- An existing user shall be able to reset their password following directions in the login page.

#### **3.1.2 Search**

- A signed in user shall be able to search for learning spaces by typing in keywords to the search bar.
- A signed in user shall be able to search for topics by typing in keywords to the search bar.
- When a signed in user performs a search, the search results shall be displayed in a new window.

#### **3.1.3 Learning Feed**

- A signed in user shall be able to view their learning feed in the home page.
- The learning feed shall display recent topics based on the users subscribed learning spaces.

#### **3.1.4 Explore Page**

- The explore page shall display learning spaces based on the users interests defined in their profile.

#### **3.1.5 Navigation Bar**

- A signed in user shall be able to view their subscribed learning spaces by clicking the 'My Learning Spaces' button.
- A signed in user shall be able to view learning spaces matching their interests by clicking the 'Explore' button.
- A signed in user shall be returned to the home page after clicking on 'Co-Learn' icon.

### **3.1.6 User Menu**

- A signed in user shall be able to browse the user menu by clicking the three lines on the top right corner.
- The user menu shall display a button to navigate to the user profile.
- The user menu shall display a button to navigate to the chats of the user.
- The user menu shall display a button to navigate to the settings of the user.
- The user menu shall display a button to navigate to the help page.
- The user menu shall display a button to log out.

### **3.1.7 Learning Spaces**

- A learning space shall display an overview of the learning space.
- A learning space shall display a button to subscribe/unsubscribe to a learning space near its title.
- A learning space shall display a prerequisites list, demonstrating the learning requirements for the learning space.
- A learning space shall display a list of topics created inside the learning space in a sorted order by date.
- A learning space shall display a button to create a topic.
- A learning space shall display a list of active users that are currently visiting the learning space.
- A learning space shall display a button near the active users to start a chat.
- A learning space shall display a list of related learning spaces, which are determined by the keywords used during the creation of learning spaces.

### **3.1.8 Topics**

- When creating a topic, a user shall be able to chose between creating a forum post and creating a topic.
- A forum post shall display an input for a title during creation.
- A forum post shall display an input for content during creation.
- A forum post shall display an attachment button for multimedia for content during creation.

- A forum post shall display a button to submit forum post during creation.
- A forum post shall display an error if the title and content is left empty when clicking the submit button.
- A quiz shall display an input for a title during creation.
- A quiz shall display an input for the question title during creation.
- A quiz shall display an attachment button to attach multimedia during creation.
- A quiz shall display minimum of two inputs for answers during creation.
- A quiz shall display a button to add answers during creation.
- A quiz shall display a button to add questions during creation.
- A quiz shall display a button to publish quiz during creation.
- When a publish quiz button is clicked, if there are no two answers for every question, the application shall display an error.
- When a publish quiz button is clicked, if there are no titles for every question, the application shall display an error.

### **3.1.9 Chats**

- A signed in user shall be able to view incoming messages from the correspondent user in real time.
- A signed in user shall be able to type an input and send a message to the correspondent user in real time by clicking the send button.

### **3.1.10 User Profiles**

- A signed in user shall be able to view their profile.
- A signed in user shall be able to view others profile.
- A user profile shall display the username of the user.
- A user profile shall display the name of the user if provided by the user.
- A user profile shall display the surname of the user if provided by the user.
- A user profile shall display the background of the user if provided by the user.
- A user profile shall display the interests of the user if provided by the user.

- A user profile shall display a quick biography of the user if provided by the user.
- A signed in user shall be able to edit their profile by clicking the 'Edit Profile' button located in their own profile.
- A signed in user shall be able to start a chat with another user by clicking the 'Start a Chat' button located in the other users profile.
- While a signed in user is editing their profile, they shall tick 'Agree to terms and conditions' checkbox before they can press 'Update' button to update their profile.

### **3.1.11 Reports**

- A user shall be able to report the contents of a topic post if they find it offensive or off-topic.
- An administrator shall be able to view the reports made by users.

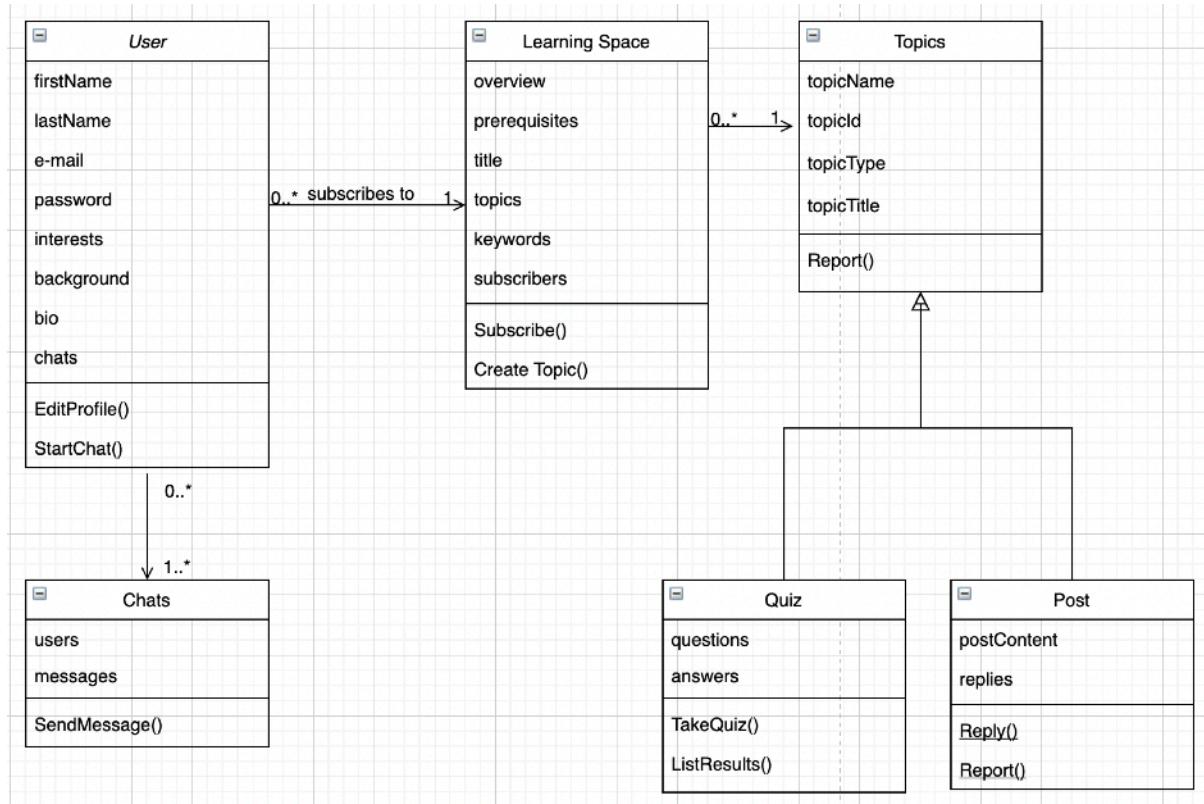
## **3.2 Non-Functional Requirements**

- A person who signs up for the first time and has spent an hour browsing the learning spaces shall be able to perform standard leaning space operations.
- The application shall be available to all users regardless of location.
- The application shall be available to all users any time.
- The user passwords shall be saved in the database in an encrypted manner.

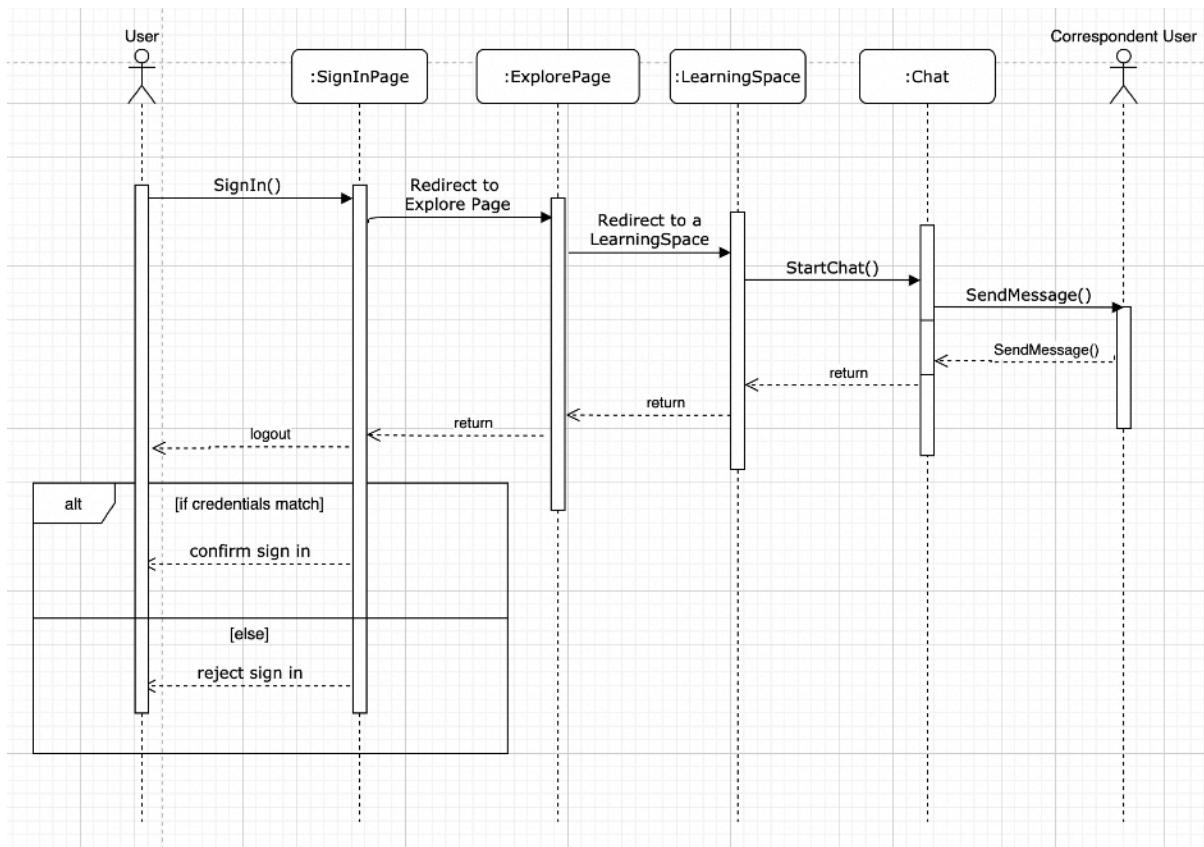
## 4.0 Design

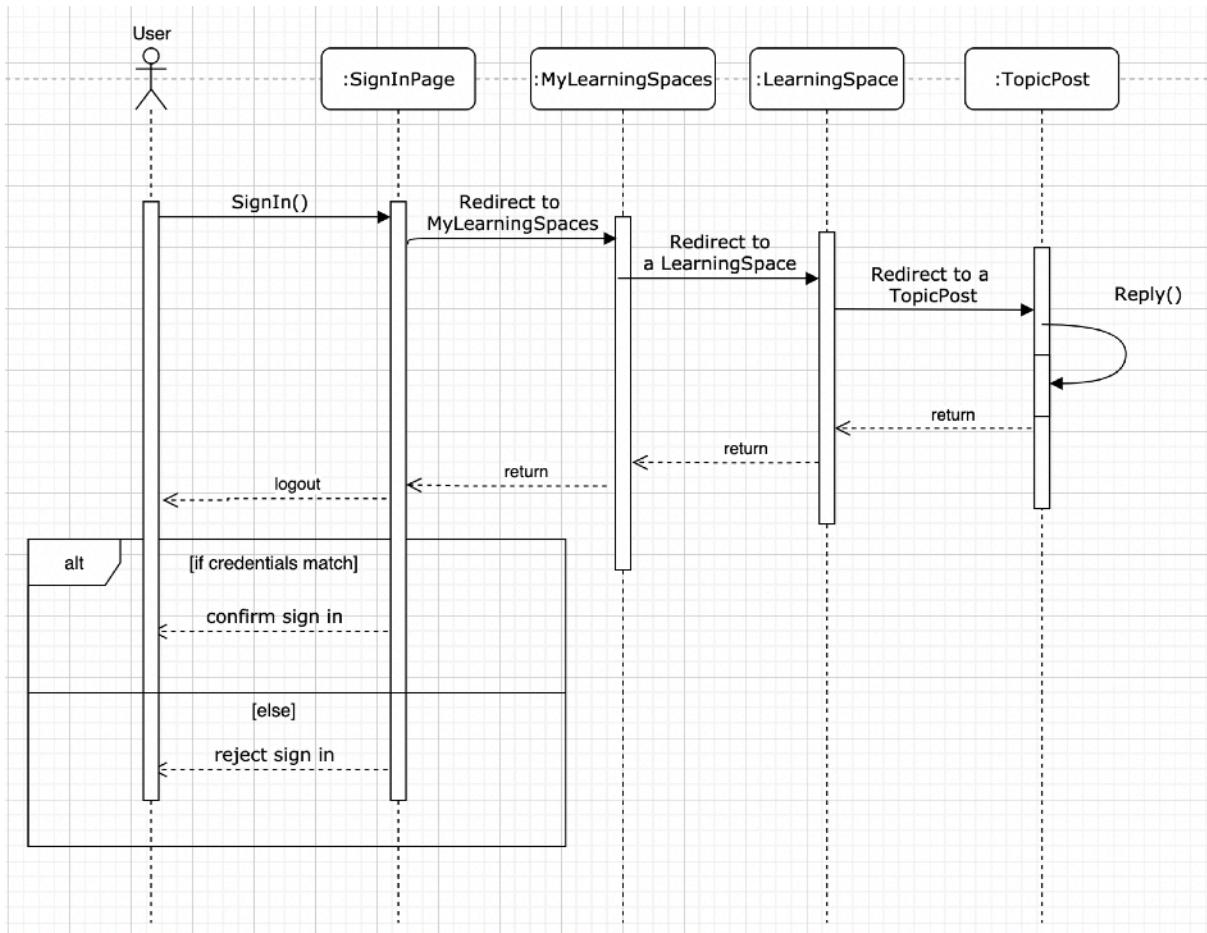
### 4.1 Software Design Diagrams

#### 4.1.1 Class Diagram

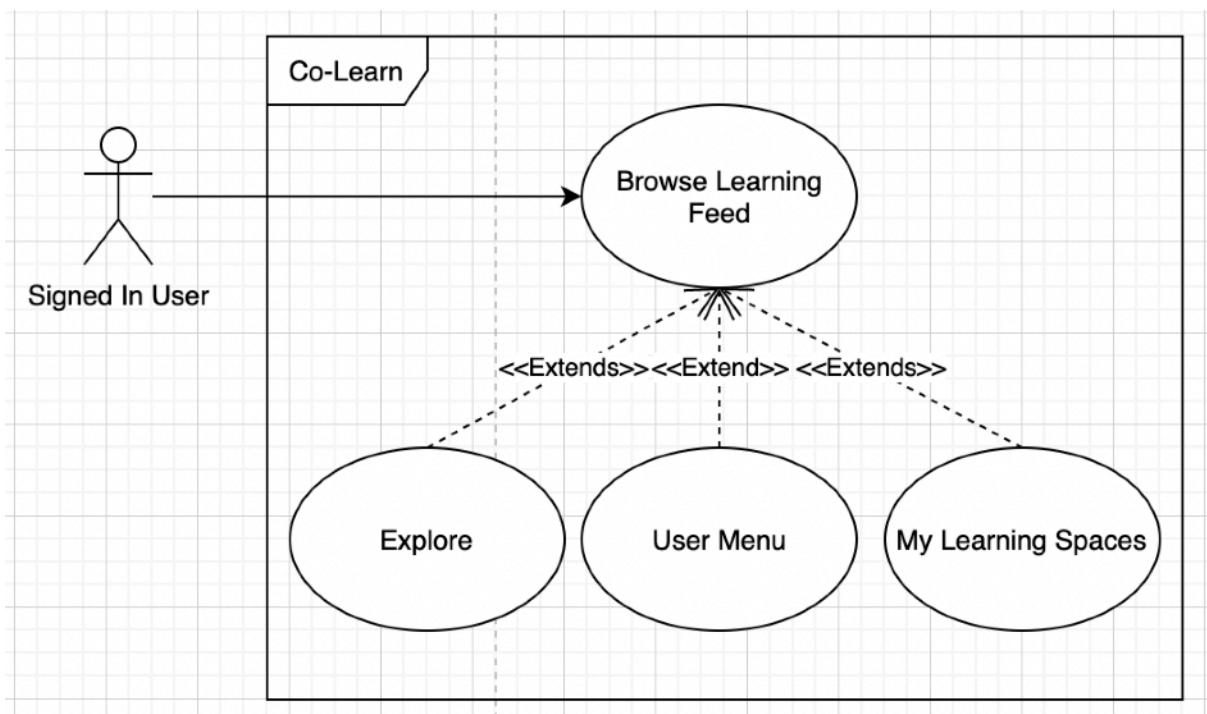


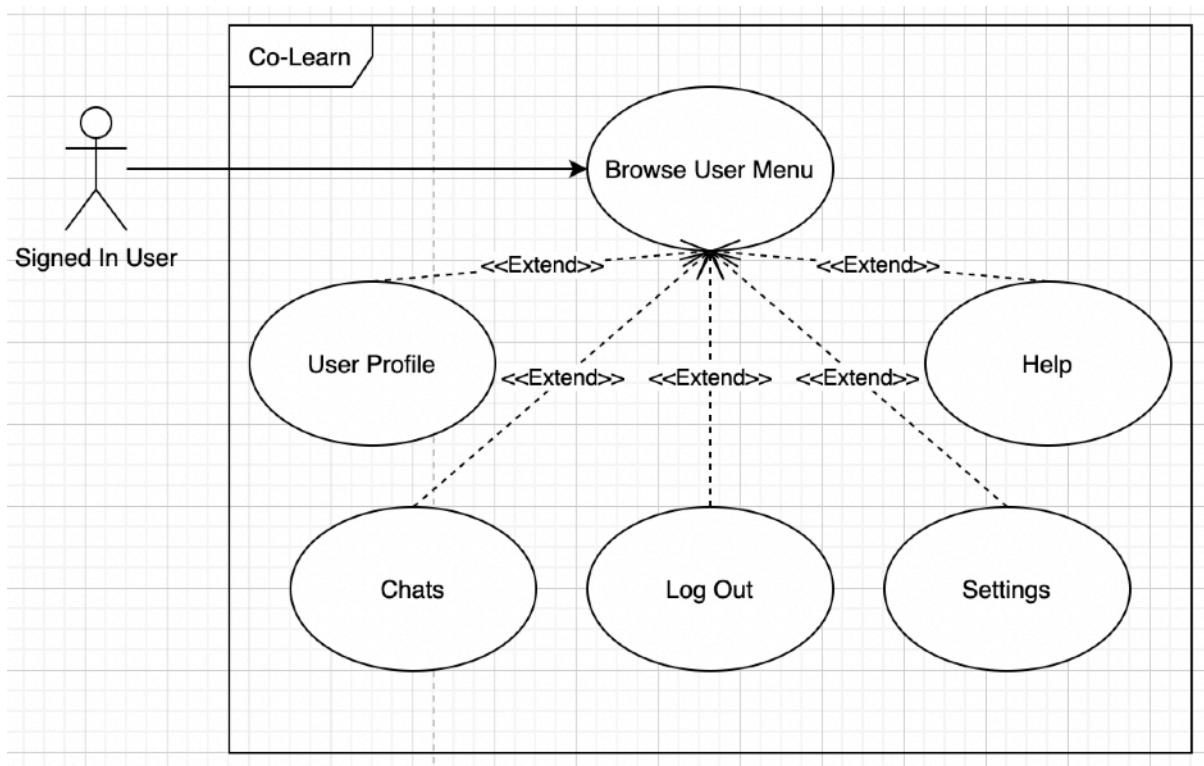
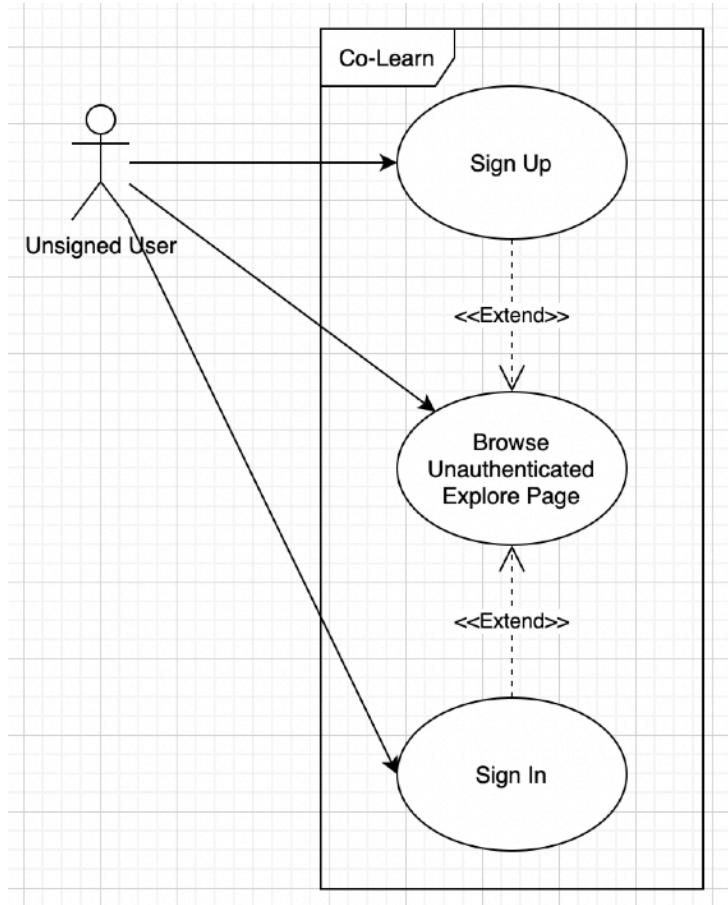
#### 4.1.2 Sequence Diagrams

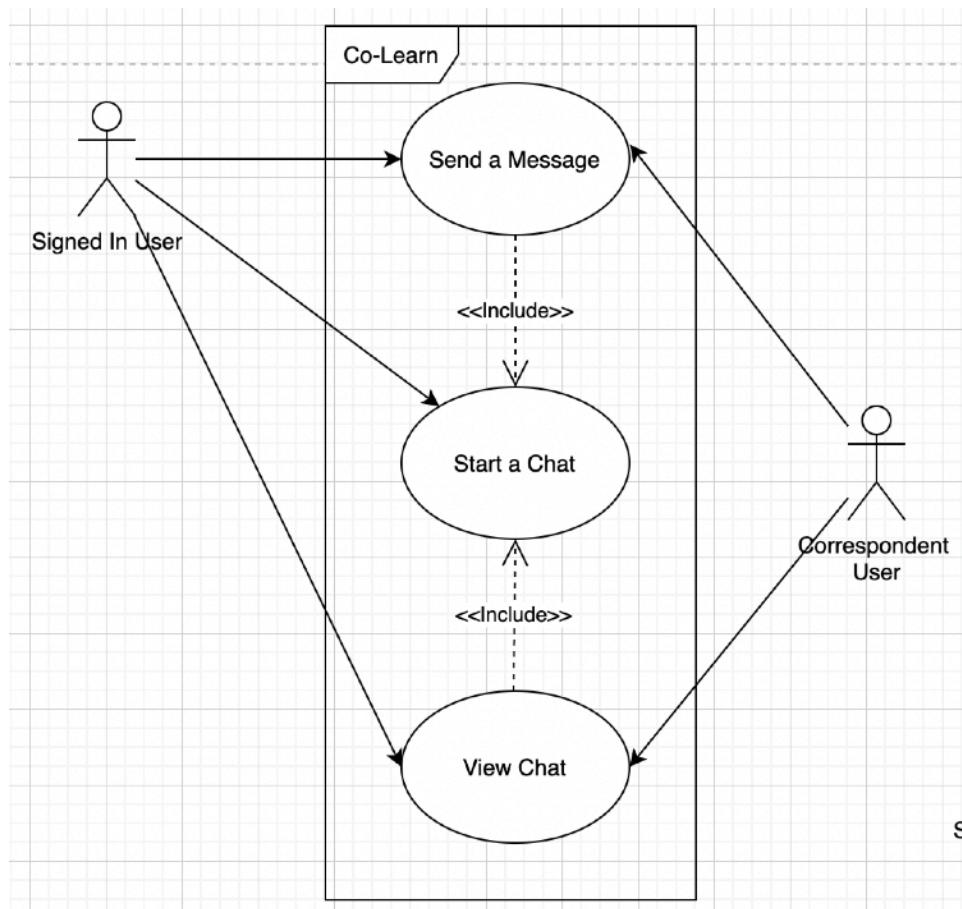
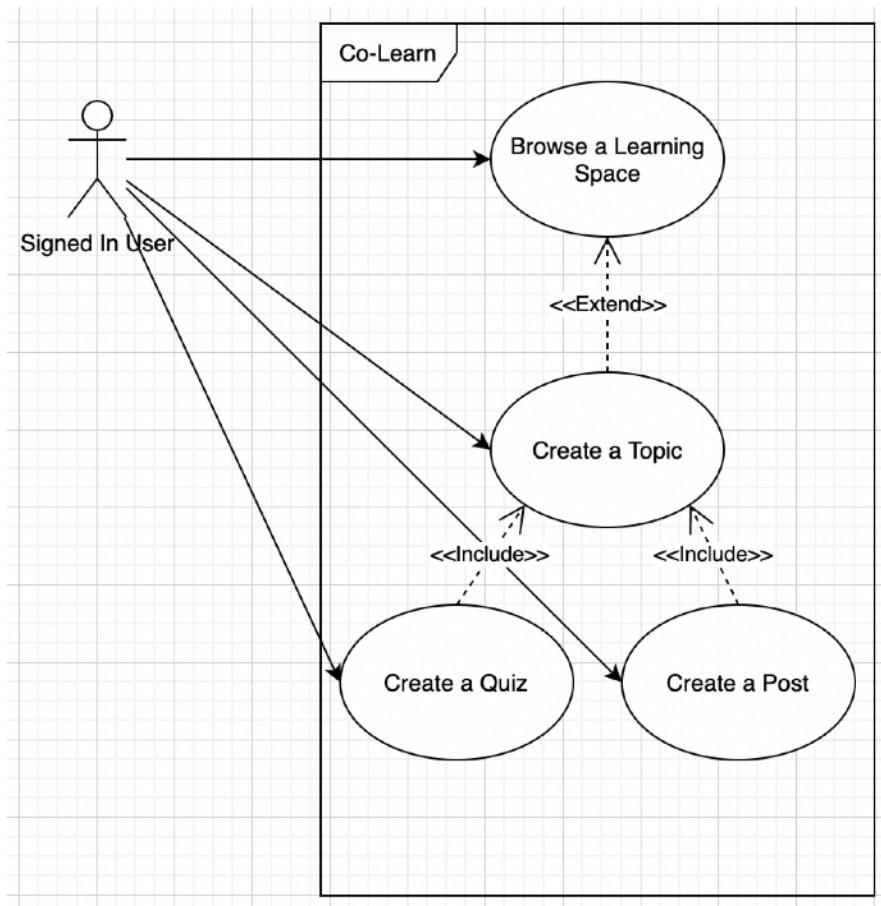


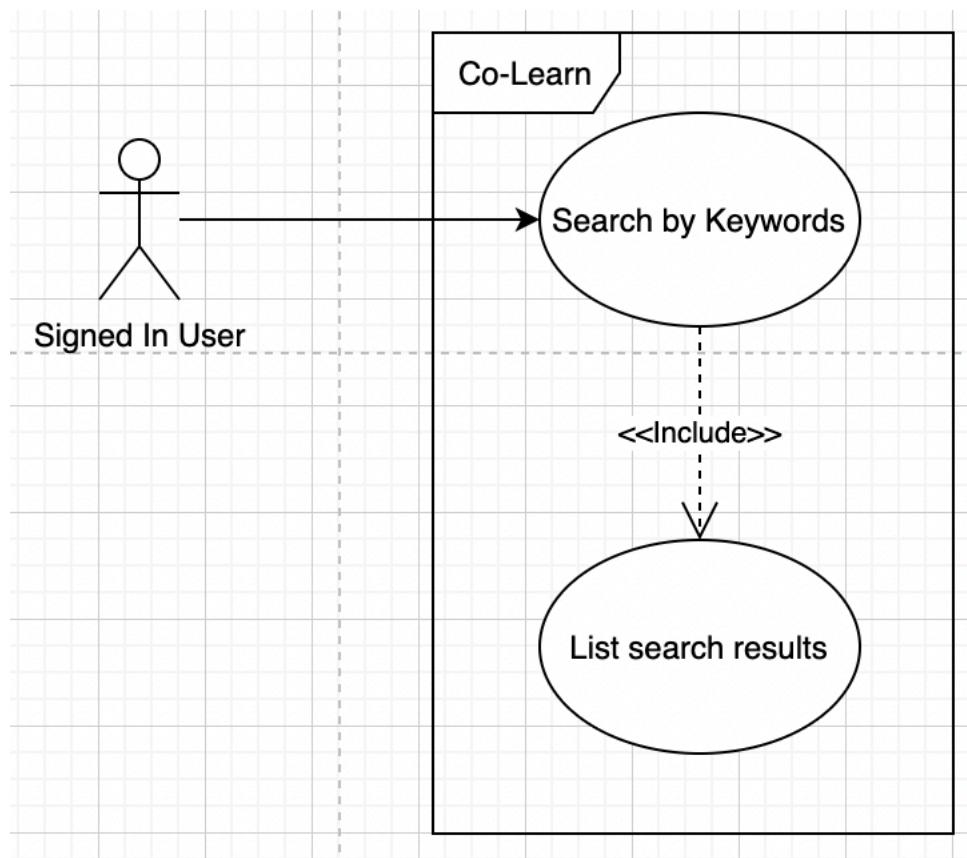
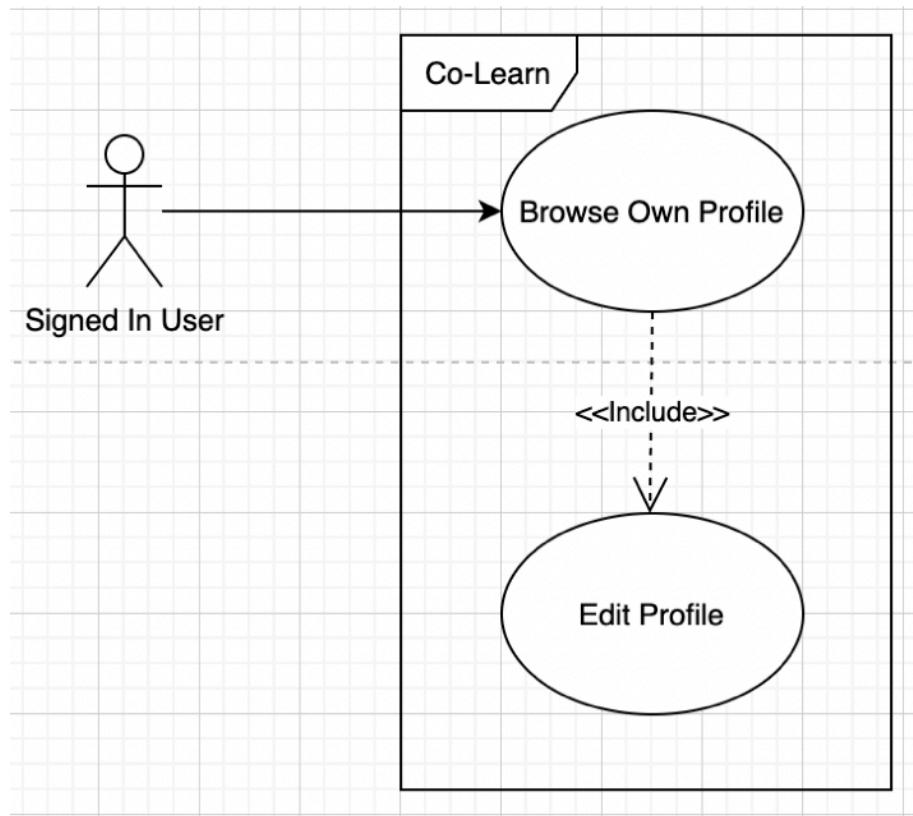


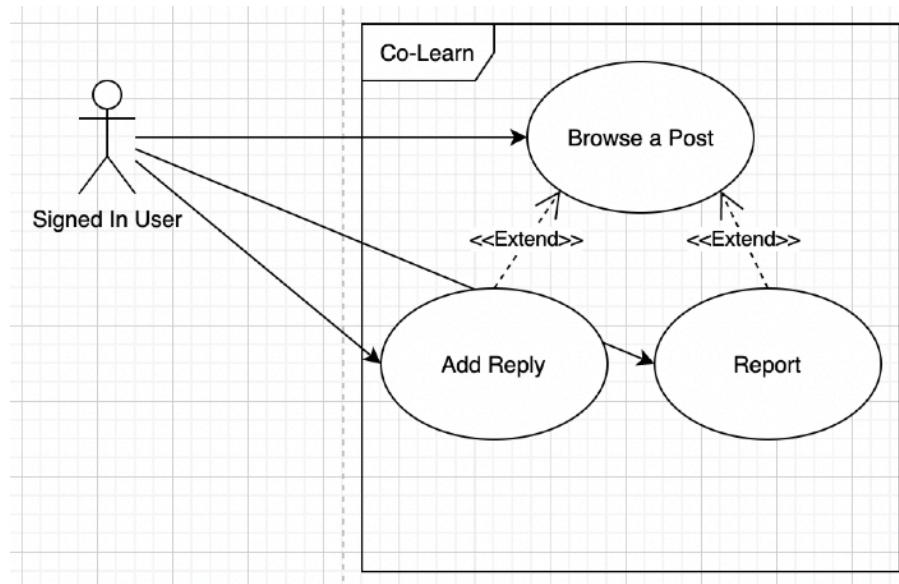
#### 4.1.3 Use Cases





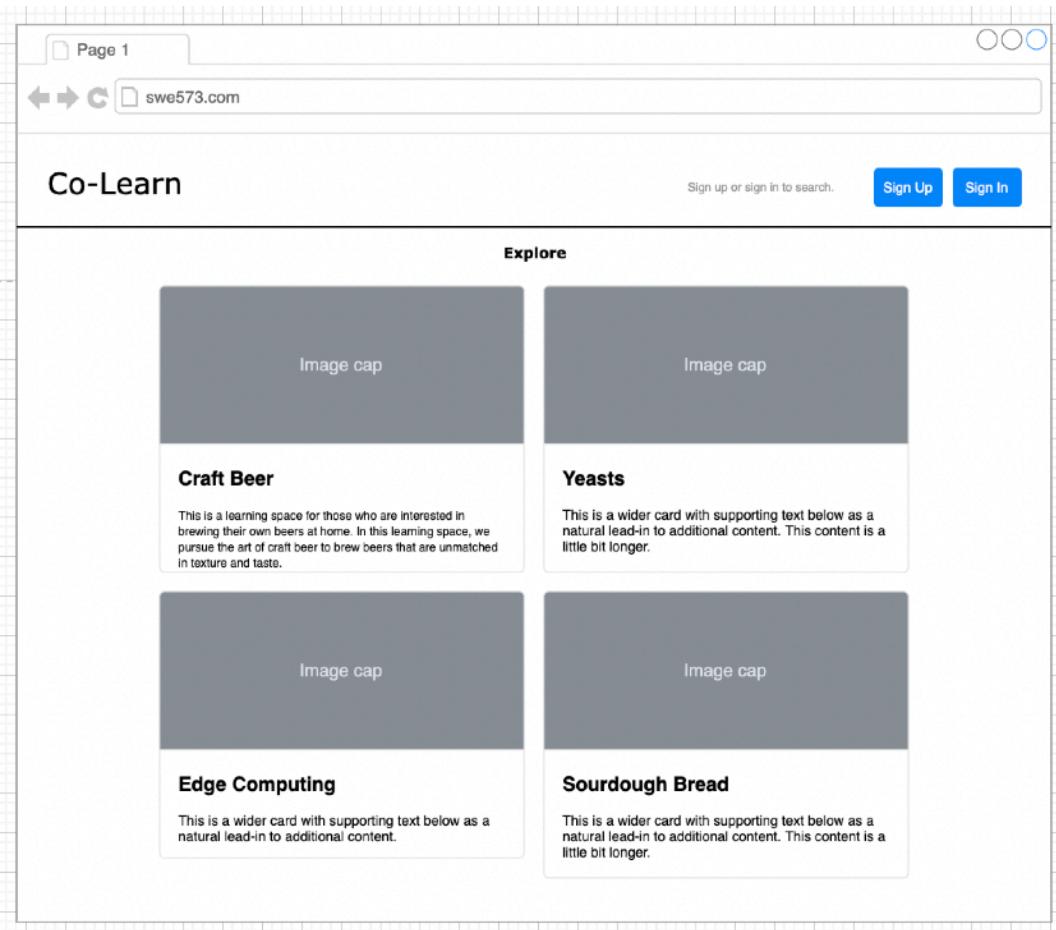




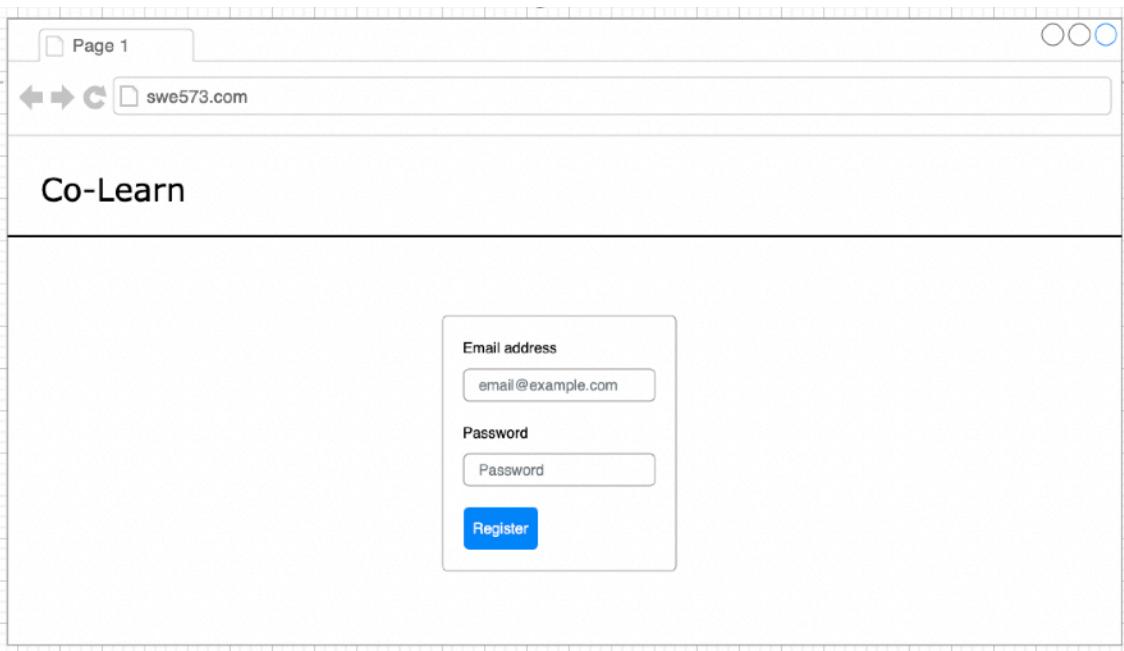


## 4.2 Mockups

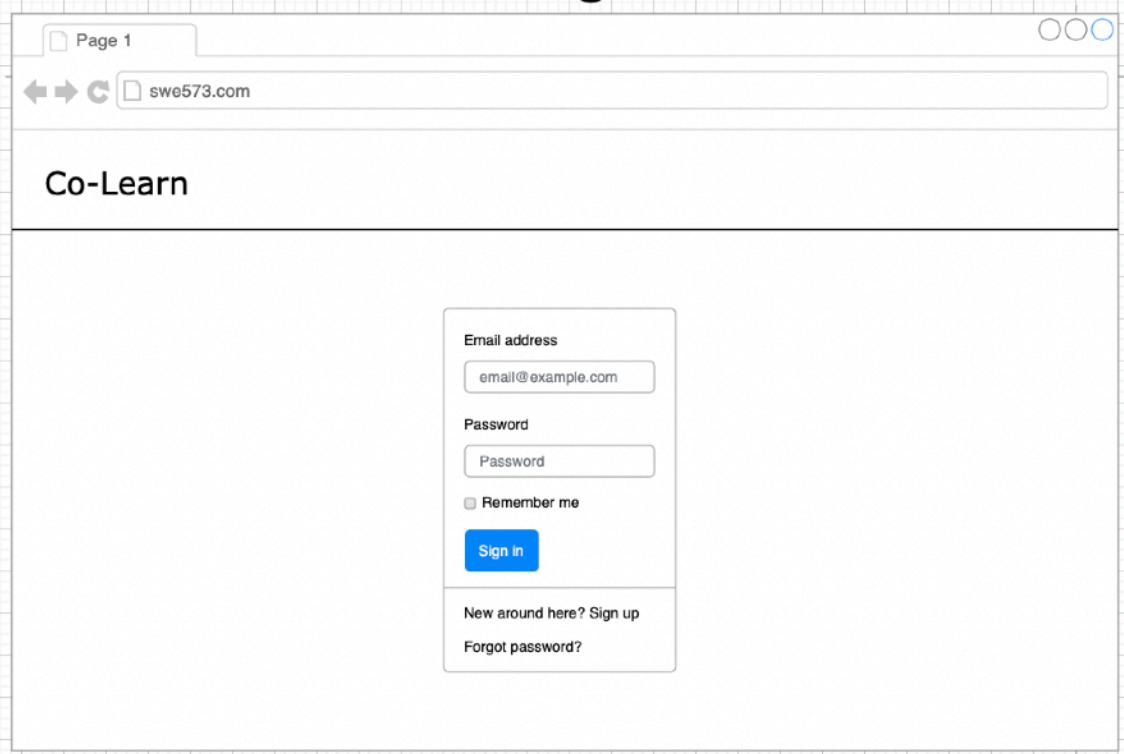
### 4.2.1 Browse Application Unsigned



#### 4.2.2 Register



#### 4.2.3 Login



#### 4.2.4 Browse Learning Feed

The screenshot shows a learning feed interface with the following elements:

- Header:** Page 1, back/forward buttons, URL swe573.com, Co-Learn logo, search bar, and navigation icons.
- Feed Section:** A title "Feed" is displayed above a list of posts.
- Post 1:** Title "What temperature is ideal for Brewing American Lager?", by @Rhonur. Content: "I have been experimenting around with Lagers however i have not yet found a good American Lager Recipe. They are all knock-off recipes made with Ale yeasts. I have found a decent Lager yeast however i can't decide on an ideal temperature. Could anyone help me out?". Response by @Ahmet: "Could you post the details of the yeast that you have found please? Each yeast has a different characteristic and require different temperatures."
- Post 2:** Title "Quiz: Test your knowledge on different types of beers.", by @Rhonur. Content: "I have a prepared quiz after recently reading a book on the history of beers. Feel free to test your knowledge and let me know if everything is correct." Response by @Ahmet: "Take Quiz". Response by @Rhonur: "Thank you for taking your time to prepare this quiz!"
- Post 3:** Content by @Mehmet: "I think the question".

#### 4.2.5 Browse Subscribed Learning Spaces

The screenshot shows the "My Learning Spaces" section of the Co-Learn interface, displaying four learning spaces:

- Craft Beer:** "Image cap" placeholder, description: "This is a learning space for those who are interested in brewing their own beers at home. In this learning space, we pursue the art of craft beer to brew beers that are unmatched in texture and taste."
- Yeast:** "Image cap" placeholder, description: "This is a wider card with supporting text below as a natural lead-in to additional content. This content is a little bit longer."
- Edge Computing:** "Image cap" placeholder, description: "This is a wider card with supporting text below as a natural lead-in to additional content."
- Sourdough Bread:** "Image cap" placeholder, description: "This is a wider card with supporting text below as a natural lead-in to additional content. This content is a little bit longer."

#### 4.2.6 Browse Explore Page

The screenshot shows the 'Explore' section of the Co-Learn platform. At the top, there are navigation links for 'My Learning Spaces' and 'Explore', along with a search bar and a 'Create Learning Space' button. Below this, a grid of learning spaces is displayed in two columns:

- Craft Beer**: A card with an 'Image cap' placeholder, a 'Subscribe' button, and a detailed description: "This is a learning space for those who are interested in brewing their own beers at home. In this learning space, we pursue the art of craft beer to brew beers that are unmatched in texture and taste."
- Yeast**: A card with an 'Image cap' placeholder, a 'Subscribe' button, and a detailed description: "This is a wider card with supporting text below as a natural lead-in to additional content. This content is a little bit longer."
- Edge Computing**: A card with an 'Image cap' placeholder, a 'Subscribe' button, and a detailed description: "This is a wider card with supporting text below as a natural lead-in to additional content."
- Sourdough Bread**: A card with an 'Image cap' placeholder, a 'Subscribe' button, and a detailed description: "This is a wider card with supporting text below as a natural lead-in to additional content. This content is a little bit longer."

#### 4.2.7 Browse a Learning Space

The screenshot shows the 'Craft Beer Learning Space' page. At the top, there are navigation links for 'My Learning Spaces' and 'Explore', along with a search bar and a 'Create Topic' button. The main content area includes:

- Overview**: A summary of the learning space: "This is a learning space for those who are interested in brewing their own beers at home. In this learning space, we pursue the art of craft beer to brew beers that are unmatched in texture and taste."
- Prerequisites**: A list of requirements:
  - Sanitization equipment & understanding of the [sanitization process](#).
  - Fermentation barrel & understanding of the [fermentation process](#).
  - Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritas et quasi architecto beatae vitae dicta sunt explicabo.
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  - Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium.
- Topics**: A list of posts in the learning space:
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
  - Look at this abomination that I have brewed! Posted: Date User: Rhonur
  - I have a quick quiz for you on lagers and pilsners. Posted: Date User: Rhonur
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
  - What temperature is ideal for Brewing American Lager? Posted: Date User: Rhonur
- Active Users**: A list of users with their last activity:
 

Rhonur	Chat
Mustafa	Chat
Ahmet	Chat
Kemal	Chat
- Related Learning Spaces**: A list of related learning spaces:
  - Yeast
  - Malts
  - Malts
  - Malts
  - Malts
  - Malts
  - Malts

#### 4.2.8 Create a Learning Space

**Create Learning Space**

**Title**  
Craft Beer

**Overview**  
This is a learning space for those who are interested in brewing their own beers at home. In this learning space, we pursue the art of craft beer to brew beers that are unmatched in texture and taste.

**Prerequisites**  
1. Sanitization equipment & understanding of the sanitization process.  
2. Fermentation barrel & understanding of the fermentation process.

Attach Header Image

**Create**

#### 4.2.9 Start a Chat

**Craft Beer Learning Space** [Subscribe](#)

**Overview**  
This is a learning space for those who are interested in brewing their own beers at home. In this learning space, we pursue the art of craft beer to brew beers that are unmatched in texture and taste.

**Prerequisites**  
1. Sanitization equipment & understanding of the sanitization process.  
2. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.  
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**Topics**

What temperature is ideal for Brewing American Lager?	<a href="#">Create Topic</a>
Look at this abomination that I have brewed!	Posted: Date User: Rhonur
I have a quick quiz for you on lagers and pilsners.	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur
What temperature is ideal for Brewing American Lager?	Posted: Date User: Rhonur

**Active Users**

Rhonur	<a href="#">Chat</a>
Mustafa	<a href="#">Chat</a>
Ahmet	<a href="#">Chat</a>
Kemal	<a href="#">Chat</a>

**Related Learning Spaces**

- Yeast
- Malts
- Malts
- Malts
- Malts
- Malts
- Malts

#### 4.2.10 Chat

The screenshot shows a web-based application interface for 'Co-Learn'. At the top, there's a header with 'Page 1', a back/forward button, and the URL 'swe573.com'. Below the header, the word 'Co-Learn' is displayed. On the right side of the header are 'Search', 'My Learning Spaces', 'Explore', and a search bar. A navigation menu icon is also present.

The main area is titled 'Chat with Ahmet'. It contains a conversation between two users, each represented by a small gray profile picture labeled '64x64'. The first message is from the user on the left: 'Thank you for taking your time to prepare this quiz!'. The second message is from the user on the right: 'Anything for a fellow co-learner!'. Below this, a third message from the user on the left asks: 'What's your take on adding rice hulls instead of rice while preparing American lager?'. At the bottom of the chat window, there's a text input field labeled 'Type a Response' and a blue 'Send' button.

#### 4.2.11 Browse a Topic

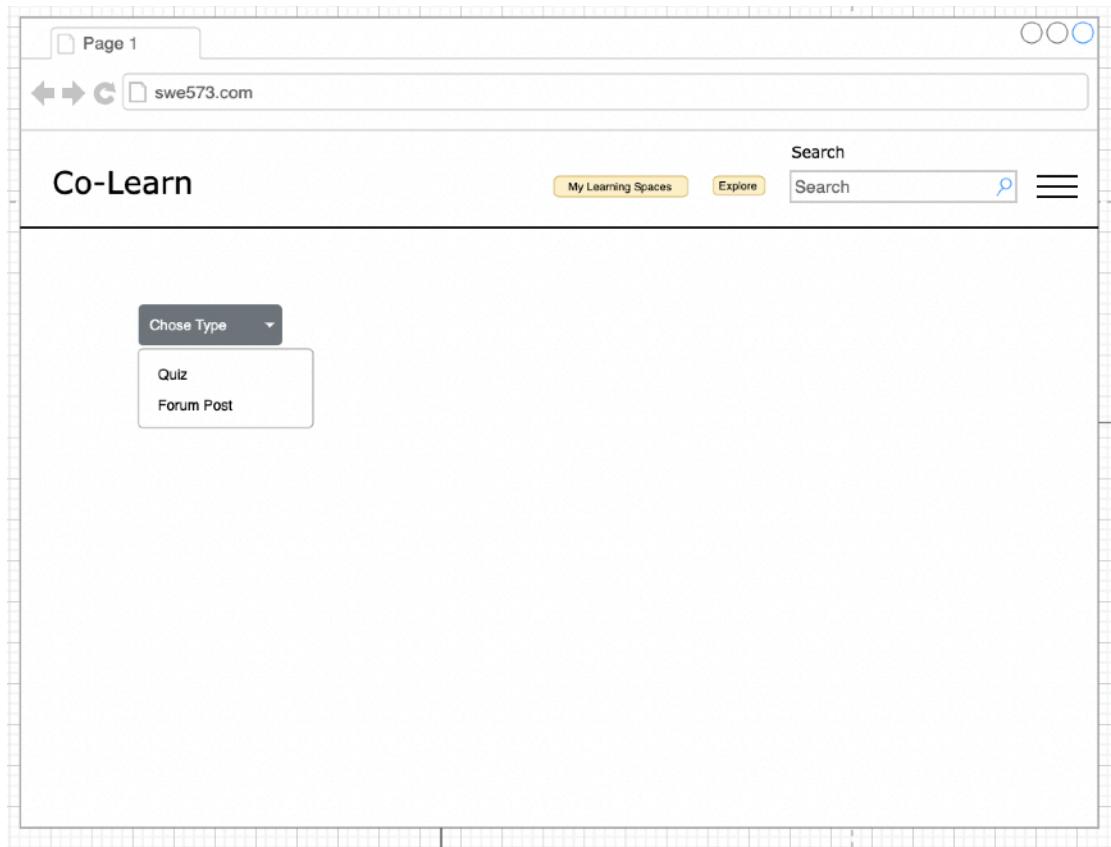
This screenshot shows a topic discussion on the 'Co-Learn' platform. The top part of the interface is identical to the previous 'Chat' screenshot, with 'Page 1', 'swe573.com', and the 'Co-Learn' header.

The main content area features a post titled 'What temperature is ideal for Brewing American Lager?' by a user named '@Rhonur'. The post includes a message asking for yeast details: 'I have been experimenting around with Lagers however i have not yet found a good American Lager Recipe. They are all knock-off recipes made with Ale yeasts. I have found a decent Lager yeast however i can't decide on an ideal temperature. Could anyone help me out?'. There is a red 'Report' button next to the post.

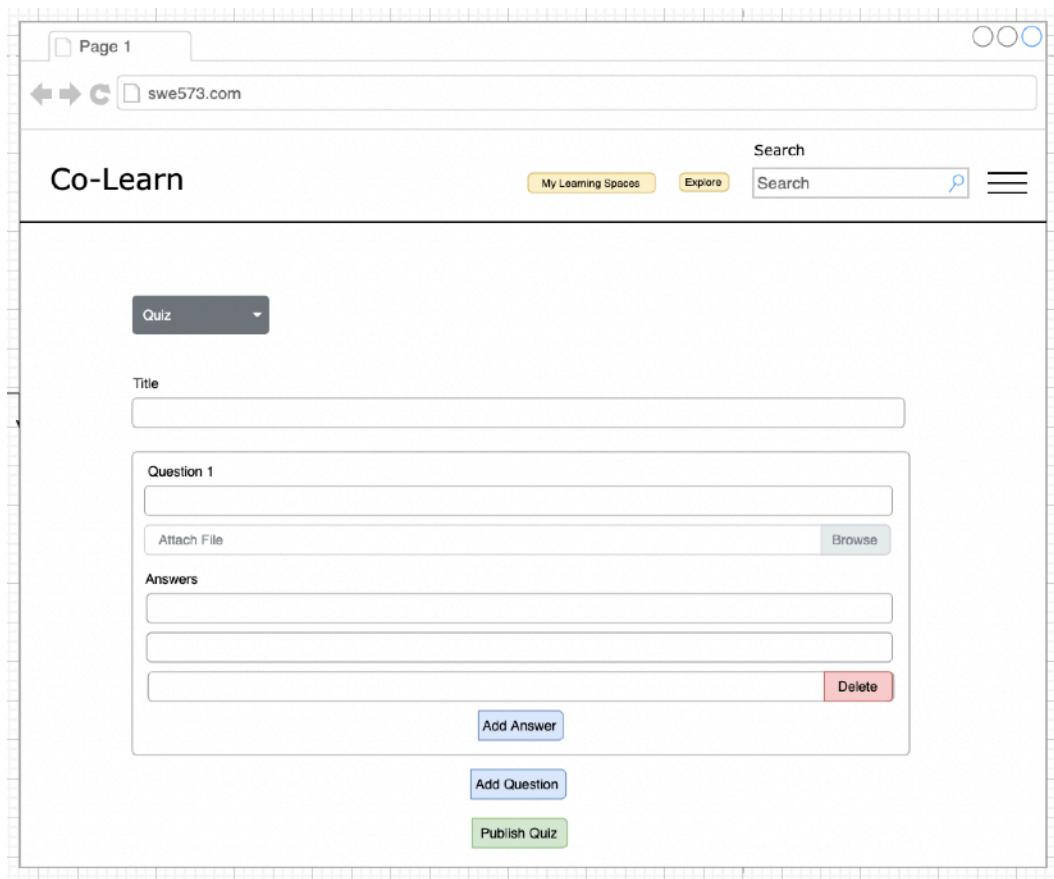
Below the post, two replies are shown from a user named '@Ahmet': 'Could you post the details of the yeast that you have found please? Each yeast has a different characteristic and require different temperatures.' This reply also has a red 'Report' button.

At the bottom of the discussion area, there is a blue 'Add a Reply' button.

#### 4.2.12 Create a Topic



##### 4.2.12.1 Create a Quiz



#### 4.2.12.2 Create a Post

The screenshot shows a web browser window with the URL [swe573.com](http://swe573.com). The page title is "Co-Learn". At the top right, there are links for "My Learning Spaces", "Explore", "Search", and a menu icon. Below the header, a "Forum Post" dropdown menu is open. The main content area contains a "Title" input field, a larger "Content" input area, and a "Attach File" section with a "Browse" button. A prominent blue "Post" button is centered at the bottom of the form.

#### 4.2.13 Browser User Menu

The screenshot shows a web browser window with the URL [swe573.com](http://swe573.com). The page title is "Co-Learn". At the top right, there are links for "My Learning Spaces", "Explore", "Search", and a user menu icon (three horizontal lines). A context menu is displayed, listing "Profile", "Chats", "Settings", "Help", and "Log out". The main content area features four learning space cards: "Craft Beer", "Yeast", "Edge Computing", and "Sourdough Bread", each with a "Subscribe" button. An arrow points to the user menu icon.

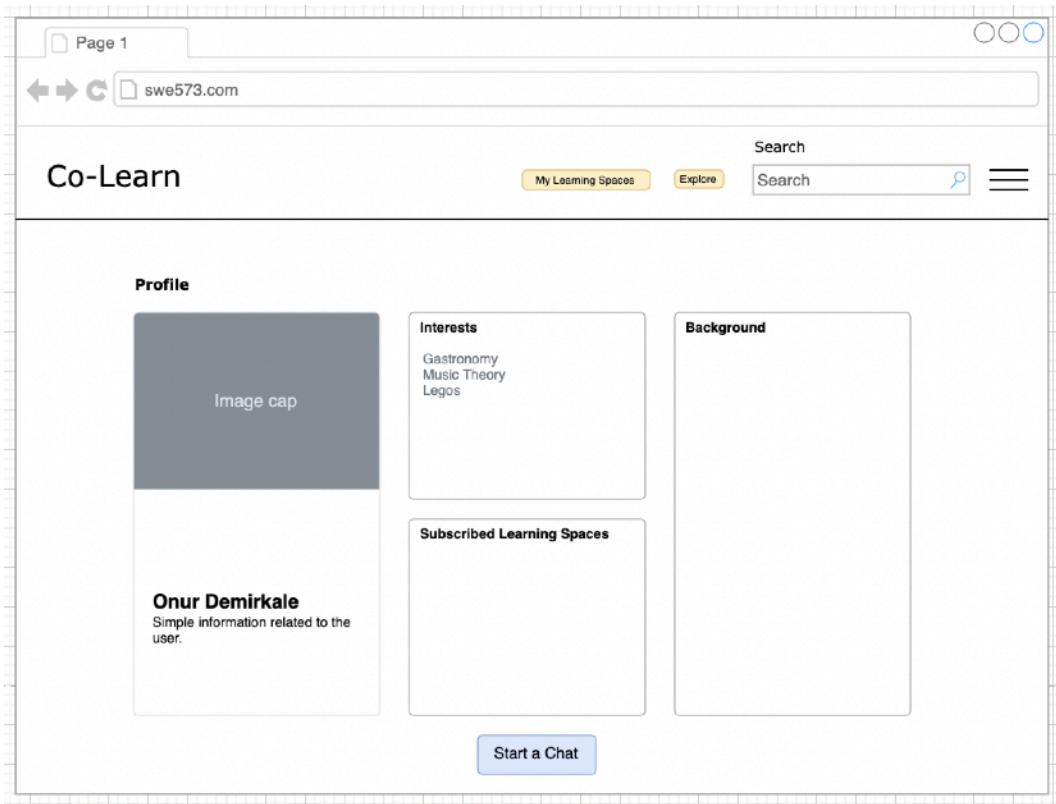
#### 4.2.14 Browser Own Profile

The screenshot shows the Co-Learn profile page. At the top, there is a header with a search bar and navigation links for "My Learning Spaces" and "Explore". Below the header, the page title is "Co-Learn". The main content area is titled "Profile". It features a large gray placeholder box labeled "Image cap". To the right of this box, there are two smaller boxes: "Interests" (listing Gastronomy, Music Theory, Legos) and "Background". Below these boxes is another section titled "Subscribed Learning Spaces". At the bottom of the profile section is a "Edit Profile" button.

##### 4.2.14.1 Edit Own Profile

The screenshot shows the Co-Learn edit profile page. The layout is similar to the profile page, with a header, search bar, and navigation links. The main content area is titled "Update Information". It includes fields for "Profile Picture" (with "Choose file" and "Browse" buttons), "Email" (set to "email@example.com"), "Password" (a redacted input field), "First name" (optional, redacted), "Last name" (optional, redacted), and "Username" (redacted). Below these fields are sections for "Bio" (a redacted text area) and "Background" (a redacted text area). There is also a "Interests" section (a redacted text area). At the bottom of the page are checkboxes for "Agree to term and conditions" and a blue "Update" button.

#### 4.2.15 Browse Other Users Profile



## 5.0 Status

### 5.1 Status of Requirements

Requirement	Status	Description
Sign Up, Sign In (3.1.1)	Complete	Implemented as specified in the requirements.
Search (3.1.2)	Complete	Implemented as specified in the requirements.
Learning Feed (3.1.3)	Incomplete	This requirement has not been implemented due to delays in the project schedule.
Explore Page (3.1.4)	Complete	The explore page is implemented with its unit tests however learning spaces are not listed according to the interests of the user.
Navigation Bar (3.1.5)	Complete	Implemented as specified in the requirements.
User Menu (3.1.6)	Complete	The dropdown user menu has been replaced with menu items to increase accessibility.

Requirement	Status	Description
Learning Spaces (3.1.7)	Complete	Requirement is complete, however, chat button has not been implemented to learning spaces as specified in the requirements as requirement 3.1.9 (Chats) was delayed.
Topics (3.1.8)	Incomplete	Topics have been separated as quizzes and questions after receiving feedback from the customer. Functionality of questions has been achieved fully along with its unit tests, however quizzes functionality has not been implemented due to delays in the schedule.
Chats (3.1.9)	Incomplete	This requirement has not been implemented due to delays in the project schedule.
User Profiles (3.1.10)	Complete	Requirement is complete, however, chat button has not been implemented to user profiles as specified in the requirements as requirement 3.1.9 (Chats) was delayed.
Reports (3.1.11)	Incomplete	This requirement has not been implemented yet due to delays in the project schedule.

## 5.2 Status of Deployment

The web application has been deployed on the Cloud through Amazon Web Services (AWS) in a Dockerized manner. As a deployment service, Elastic Container Service (ECS) has been used. To host the container image on a registry, Elastic Container Registry (ECR) has been used. ECS allows to run containers on the Cloud and connect an application load balancer to the container with ease. As an online database, Amazon Relational Database Service (RDS) has been used. A public RDS instance has been created and every time a container is started on the ECR, the credentials of the online database is injected into the container as environment variables through task definitions. The credentials of the database has been specified as environment variables in section 1.0. The URL of the load balancer is <http://ec2co-ecsel-1us90618ebhuf-31633754.eu-central-1.elb.amazonaws.com> and is accessible on port 80.

## 6.0 System Manual

### 6.1 System Requirements

The system only requires the installation of Docker and Docker-Compose to run the Django application locally. Both can be installed on Docker.com.

**Requirements:**

- Docker
- Docker-Compose

### 6.2 Running through Docker-Compose

To run the Django application through Docker-Compose, switch to the directory of the Docker-Compose file using the preferred command line tool and run the following commands:

1. docker-compose build
2. docker-compose up

Docker-Compose builds and starts a Docker image out of its current context and simultaneously starts a container running Postgres image as well. The networking between the containers are simplified and handled through Docker-Compose. Environment variables to connect the database and the Django application is specified in the Docker-Compose file.

During the development, it might be necessary to use the manage.py file to run various Django commands. To access the container while its running, run the following command:

- docker exec -it 'CONTAINER-ID' bash

This command will start the bash inside the container and connect it to the standard input and output of the host operating system. The container ID can be obtained by running the following command:

- docker ps

This command will list all running containers and allow the user to copy the container ID.

### 6.3 Running using Dockerfile with an online database

To run the Django application by building an image out of its current context using a Dockerfile, first create an environment variables file with the name '.env'. This naming convention is not a necessity however this filename is included in the gitignore file and prevents the accidental push of credentials to the GitHub repository. The contents of the environment variables file is specified in the credentials section

(1.0). Once the environment variables file is included in the Docker command as demonstrated below, the environment variables are injected into the Docker container and the Django application uses these variables to connect to the database and set various Django settings.

To run the Docker container, run the following commands:

1. docker build -t 'YOUR-DOCKER-USERNAME'/'TAG-NAME' .
2. docker run -env-file .env 'YOUR-DOCKER-USERNAME'/'TAG-NAME'

## 7.0 User Manual

### 7.1 Browse Explore Page Unsigned

To use the system, the user can follow the URL of the system and explore the learning spaces available, whether signed or unsigned.

The screenshot shows a web browser window with the URL "Not Secure — ec2co-ecsel-1us90618ebhuf-31633754.eu-central-1.elb.amazonaws.com". The page is titled "Co-Learn" and features a "Sign In" and "Sign Up" button in the top right. Below the title, there are three cards representing different learning spaces:

- Molecular Gastronomy**: An image of a bowl of soup with a garnish. Description: "Molecular gastronomy is a scientific discipline within the culinary arts that involves preparing food in a way that highlights the physical and chemical reactions between different food ingredients." A "View" button is present.
- Sourdough Bread**: An image of a loaf of sourdough bread. Description: "Bread made with sourdough starter, has so much more flavor and complexity than yeasted bread. Join us to explore how to make the tastiest Sourdough Bread together." A "View" button is present.
- Beer History**: An image of several glasses filled with beer. Description: "Beer is one of the oldest drinks humans have produced. This is a learning space for those who are interested in learning the roots of beer which dates back to 5th millennium BC." A "View" button is present.

## 7.2 Browse Learning Space Unsigned

The user can browse the overview contents of the learning space by clicking on the view button. However, to browse questions or create a question, the user has to sign up or sign in following the buttons on the top right.

The screenshot shows a web browser window with the URL "Not Secure — ec2co-ecsel-1us90618ebhuf-31633754.eu-central-1.elb.amazonaws.com". The main content area is titled "Home Brewing". It contains three main sections: "Overview", "Prerequisites", and "Questions".

- Overview:** A brief description: "This is a learning space for those who are interested in brewing their own beers at home and learning its nuances in depth."
- Prerequisites:** A list of topics: Fermentation, Sanitization, Hops, Yeasts, Malts.
- Questions:** A list of posted questions:
  - Main types of beer yeasts (Posted by: onurdemirkale, Created: May 26, 2022, 8:54 p.m.)
  - Ideal fermentation temperature for WLP830 (Posted by: onurdemirkale, Created: May 26, 2022, 8:58 p.m.)

On the right side, there are two sections:

- Users:** onurdemirkale, root
- Related Spaces:** Beer History, Home Brewing

## 7.3 Sign Up or Sign In

The screenshot shows the "Co-Learn" homepage. At the top right, there are "Sign In" and "Sign Up" buttons, which are circled in red.

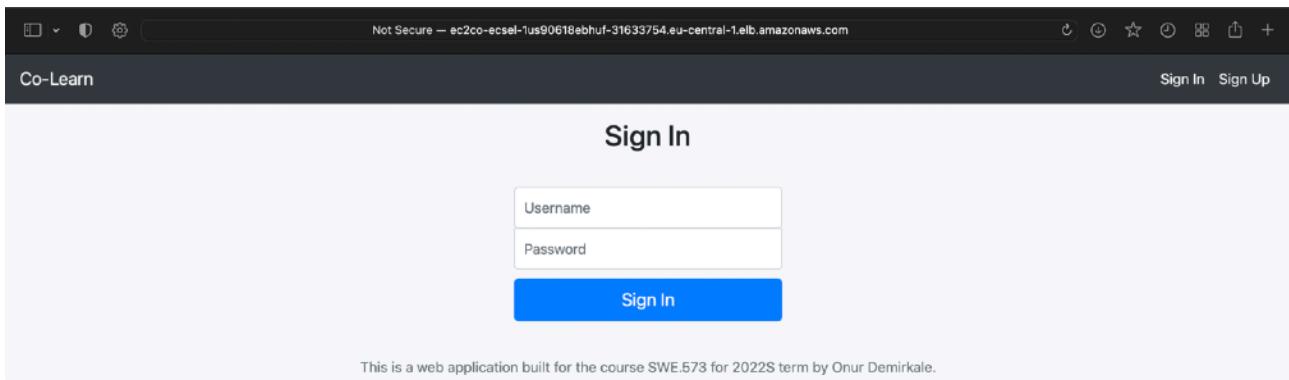
Following the buttons, the user can sign up:

The screenshot shows the "Sign Up" form on the "Co-Learn" website. The form consists of the following fields:

- Username:
- First Name:
- Last Name:
- Email:
- Password:
- Confirm Password:

At the bottom of the form is a blue "Sign Up" button.

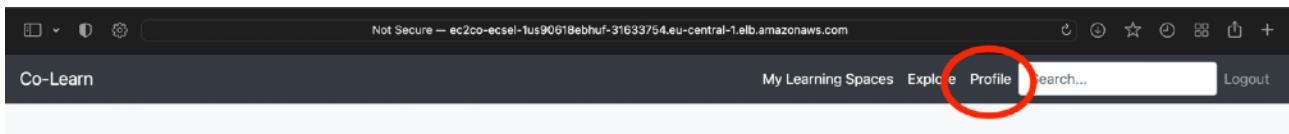
At the very bottom of the page, a footer note: "This is a web application built for the course SWE.573 for 2022S term by Onur Demirkale."



Or sign in:

#### 7.4 View Profile

Once the user have authenticated, they can proceed to view or edit their profile. The user can navigate to their profile by simply clicking on the profile button on top right:



Once the user is navigated to their profile, the user can upload a profile picture by clicking on the browse button (red circle) below their name or edit their profile by clicking the edit button (blue circle) below the browse button.

**Biography**

Born in 1996 in Istanbul.

**Background**

Software Engineering MSc student at Boğaziçi University. Currently working as a Cloud Engineer. Experience developing full-stack web applications using Node.js.

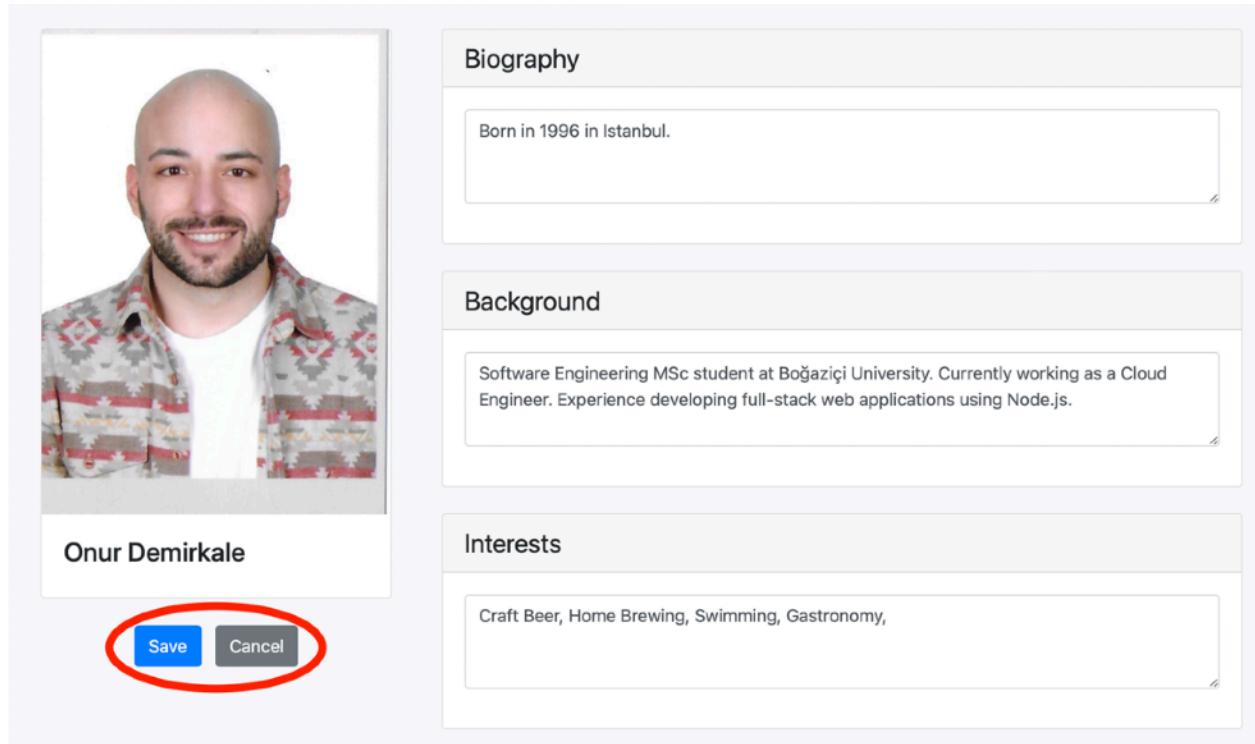
**Interests**

- Craft Beer
- Home Brewing
- Swimming
- Gastronomy

**Learning Spaces**

- Molecular Gastronomy
- Sourdough Bread
- Beer History
- Home Brewing

Once the user have edited her/his profile, they can click on the save button to save the changes or cancel them.



## 7.5 Create a Learning Space

If the user is signed in, the user can create a learning space by clicking on the 'Create a learning space' button on the explore page.

The screenshot shows the "Co-Learn" explore page. At the top, there is a navigation bar with links for "My Learning Spaces", "Explore", "Profile", "Search...", and "Logout". Below the navigation bar, there are three learning space cards. The first card is titled "Molecular Gastronomy" and features an image of a dish. The second card is titled "Sourdough Bread" and features an image of bread. The third card is titled "Beer History" and features an image of several glasses of beer. A button labeled "Create a Learning Space" is located above the cards, and it is circled in red to indicate it is the focus of the action.

The user can then create a learning space by filling out the required fields and clicking on the 'save' button.

Not Secure — ec2co-ecsel-1us9061Bebhuf-31633754.eu-central-1.elb.amazonaws.com

Co-Learn My Learning Spaces Explore Profile Search... Logout

### Create Learning Space

Title

Overview

Prerequisites

Keywords

Choose a thumbnail...

Create Cancel

## 7.6 Edit Learning Space

When inside a learning space, the user can edit the contents of the learning space by clicking on the edit button.

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Co-Learn My Learning Spaces Explore Profile Search... Logout

### Beer History

Overview Subscribed Edit

Beer is one of the oldest drinks humans have produced. This is a learning space for those who are interested in learning the roots of beer which dates back to 5th millennium BC.

Prerequisites

- \* None

**Users**

- root
- onurdemirkale

**Related Spaces**

- Beer History
- Home Brewing

The user can then click on save to save the changes or cancel to cancel.

Not Secure — ec2co-ecsel-1us90618ebhuf-31633754.eu-central-1.elb.amazonaws.com

Co-Learn My Learning Spaces Explore Profile Search... Logout

## Edit Learning Space

Title  
Beer History

Overview  
Beer is one of the oldest drinks humans have produced. This is a learning

Prerequisites  
None

Keywords  
Beer, History

**Save** **Cancel**

### 7.7 Subscribe to a Learning Space

The user can subscribe to a learning space by clicking on the 'subscribe' button when browsing the learning space.

Co-Learn My Learning Spaces Explore Profile Search... Logout

## Sourdough Bread

Overview **Subscribe** **Edit**

Bread made with sourdough starter, has so much more flavor and complexity than yeasted bread. Join us to explore how to make the tastiest Sourdough Bread together.

Prerequisites

- Basic Cooking Skills

Users
 

- onurdemirkale

Related Spaces
 

- Molecular Gastronomy
- Sourdough Bread

Once the user is subscribed to a learning space, they can browse their learning spaces by clicking on the 'My Learning Spaces' button.

The screenshot shows the Co-Learn platform interface. At the top, there's a navigation bar with links for 'My Learning Spaces', 'Explore', 'Profile', 'Search...', and 'Logout'. A red circle highlights the 'My Learning Spaces' link. Below the navigation, there are three learning space cards:

- Molecular Gastronomy**: Features an image of a dish with a white foam garnish. Description: "Molecular gastronomy is a scientific discipline within the culinary arts that involves preparing food in a way that highlights the physical and chemical reactions between different food ingredients." Includes a 'View' button.
- Beer History**: Features an illustration of various beer vessels. Description: "Beer is one of the oldest drinks humans have produced. This is a learning space for those who are interested in learning the roots of beer which dates back to 5th millennium BC." Includes a 'View' button.
- Home Brewing**: Features an image of brewing equipment on a table. Description: "This is a learning space for those who are interested in brewing their own beers at home and learning its nuances in depth." Includes a 'View' button.

## 7.8 Create Question

The user can create a question inside the learning space by clicking on the 'Create Question' button located near the questions.

The screenshot shows the 'Molecular Gastronomy' learning space page. The top navigation bar is identical to the previous screenshot. The main content area includes:

- Overview**: Description: "Molecular gastronomy is a scientific discipline within the culinary arts that involves preparing food in a way that highlights the physical and chemical reactions between different food ingredients." Includes a 'Subscribed' button and an 'Edit' button.
- Prerequisites**: List: "Advanced Cooking Skills".
- Questions**: Includes a 'Create Question' button, which is circled in red.
- Users**: List: "onurdemirkale", "root".
- Related Spaces**: List: "Molecular Gastronomy", "Sourdough Bread".

The user can then create a question by filling in the form and clicking on 'Submit'

The screenshot shows a 'Create Question' dialog box. At the top is a title bar with 'Co-Learn' on the left and navigation links 'My Learning Spaces', 'Explore', 'Profile', a search bar 'Search...', and a 'Logout' button on the right. The main area is titled 'Create Question'. It contains two input fields: 'Title' with a placeholder 'Question Title' and 'Question Content' with a large text area. At the bottom are two buttons: a blue 'Submit' button and a grey 'Cancel' button.

## 8.0 Test Results

### 8.1 User Test Results

After the user tests, a major deficiency has been noted in the system:

- The system does not provide dynamic feedback to incorrect inputs. A user may enter an invalid password or username when signing in or missing information when signing up, however, the system does not provide any feedback and simply returns user to the same page.

### 8.2 Unit Test Results

The unit tests include 17 tests that target implemented features of the web application. These tests included testing the functionality of the learning spaces, subscribed learning spaces, users and user profiles and the search functionality. All of the tests were successful and the system works as intended.

```
root@53c73618cddd:/code/swe573# python manage.py test
Creating test database for alias 'default'...
System check identified no issues (0 silenced).
.....
-----
Ran 17 tests in 2.152s
OK
Destroying test database for alias 'default'...
root@53c73618cddd:/code/swe573#
```

## 9.0 References

- [1] Bootstrap 4.0. (2022). Bootstrap. <https://getbootstrap.com/docs/4.0/>
- [2] Django documentation | Django documentation | Django. (2022). Django. <https://docs.djangoproject.com/en/4.0/>