Software Development Practice (SWE-573)

Boğaziçi University

Project Report

Project Name: Infrasave

Deployment URL: https://dialecticsoftware.com
Repository: https://github.com/haydin505/SWE-573/releases/tag/v0.9

Muhammet Hüseyin Nurullah AYDIN
Advisor: Suzan Üsküdarlı

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HONOR CODE

Related to the submission of all the project deliverables for the Swe573 2022 Fall semester project reported in this report, I Muhammet Hüseyin Nurullah AYDIN declare that:

- I am a student in the Software Engineering MS program at Bogazici University and am registered for Swe573 course during the 2022 Fall 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.

Muhammet Hüseyin Nurullah Aydın

Application Overview

Product Management Overview

This project has been developed for a content management and sharing platform suitable for a multi-user structure. Users may create content and decide who can see the created content.

Content visibility consist three types:

1. Everyone: Everyone can see the content. In other words, the creator, friends and other non-friend users can see the content.
2. Friends: Only the users in the friend list can see the content. In other words, the creator and friends can see the post.
3. Private: Only the creator can see the content.

Moreover, users may add a content to the liked contents list so that they can easily find them. Users may add tags to contents. Users can search contents, users and contents with tags. Users may add other users as friends and manage friend relationships.

Technological Overview:

The frontend and backend of the app are not tightly coupled. We can deploy them separately. This functionality fits perfectly with the deployment strategy as we use docker and cloud technologies to deploy our app. Moreover, we can scale our app horizontally, which means we can deploy a few more apps during peak hours and serve them easily. The architecture works much more efficiently during the deployment phase compared to other full-stack implementations. Since we don't need the front-end applications as much as the back-ends, we can deploy different numbers of frontend and backend servers. For example, we can deploy 2 frontend applications and 10 backend applications separately. In addition, since we developed the backend application as a REST API, we can easily integrate mobile applications or desktop applications.

Frontend:

- React.JS
- Redux
- React Router Dom

Backend:

- Spring Boot Starter (REST application)
- Hibernate as ORM
- MySQL

User Stories

Account User Stories (Completed)

1. As a user I want to login so that I can see my content.
2. As a user I want to register so that I can login and perform operations in the application.
3. As a user I want to logout so that I can securely terminate my session.
4. As a user I want to change my password so that I can keep my account secure.
5. As a user I want to change my personal details so that I can keep my profile up to date.
6. As a user I want to reset my password so that I can recover my account.

Content User Stories (Completed)

1. As a user I want to create content.
2. As a user I want to modify content so that I can keep content up to date.
3. As a user I want to delete content.
4. As a user I want to see the contents created by me.
5. As a user, I would like to see my feed which is the contents visible to everyone, the contents only visible to friends, and the content only visible to me.
6. As a user I want to add title to my content.
7. As a user I want to add image to my content.
8. As a user I want to see when a content created and when a content modified.
9. As a user I want to add a description so that me and other people can understand the purpose of the content.
10. As a user I want to create private content so that only I can see the content.
11. As a user I want to create content only visible to my friends.
12. As a user I want to create content visible to everybody.
13. As a user I want to add tags to content so that it can be listed easily and categorized according to tag.
14. As a user I want to see the creator of the content so that I can see other posts of creator and add friends.

Liked Content User Stories (Completed)

1. As a user I want to save a content to liked contents so that I can find it easily.
2. As a user I want to delete a content from my liked contents.

Tag User Stories (Completed)

1. As a user I want to create a new tag so that I can organize my posts easily.
2. As a user I want to assign color to tags so that I can recognize them easily.

Friend User Stories (Completed)

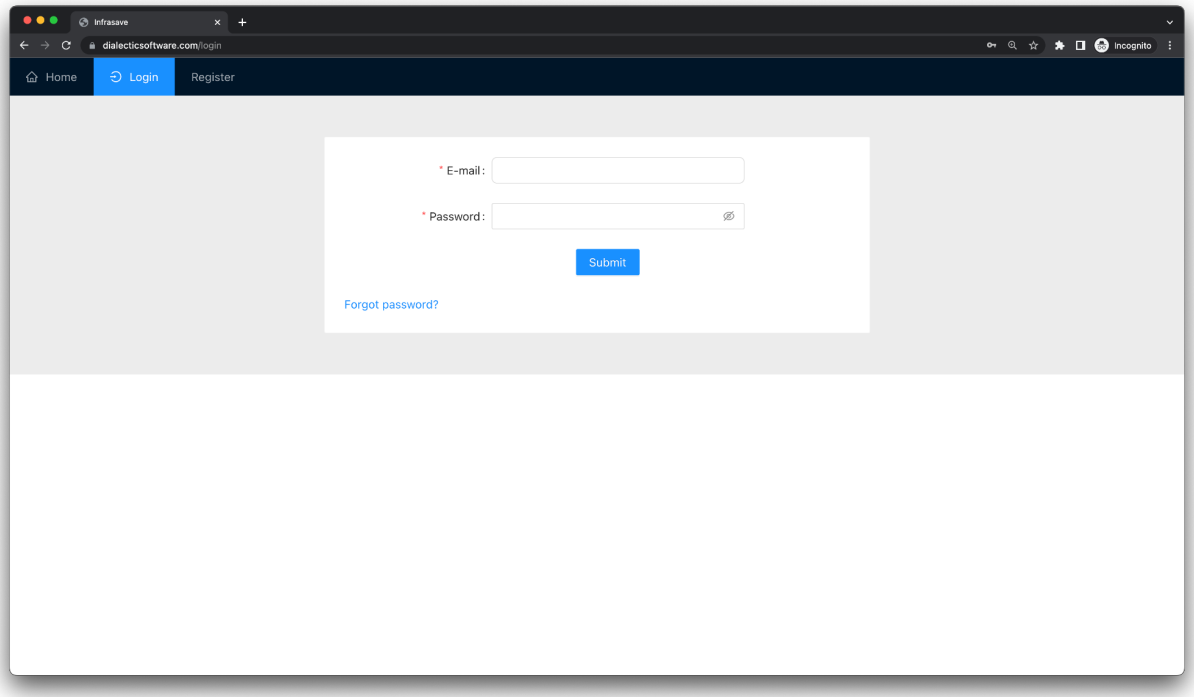
1. As a user I want to add another user as a friend so that I can see the contents only visible to friends.
2. As a user, I would like to see pending friend requests and approve or decline a friend request so that I can manage my friend list and determine who can view my contents that only my friends can view.
3. As a user, I would like to remove another user from my friend list so that I can manage my friend list.

Search Functionality (Completed)

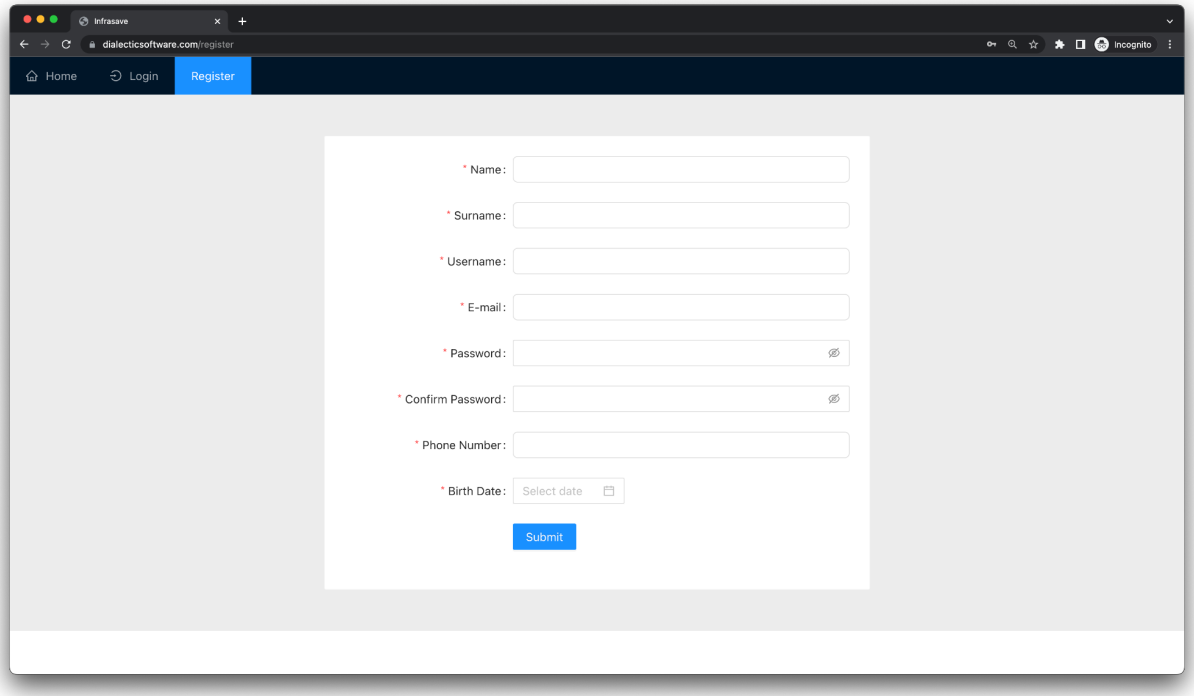
1. As a user I want to search for users with the combinations of name, surname, username so that I can easily find users and check out their contents.
2. As a user I want to search for contents with the combinations of title, description so that I can find the contents efficiently.
3. As a user I want to search for contents with tags attached to it so that I can find contents based on the tag.
4. As a user I want to search everything with a single button so that I can see related users, contents and tag attached contents. For example I would like to search for “politics” and check out politics related contents, contents containing “politics” tag, users whose name or surname or username of the user contains “politics”.

Application Screenshots

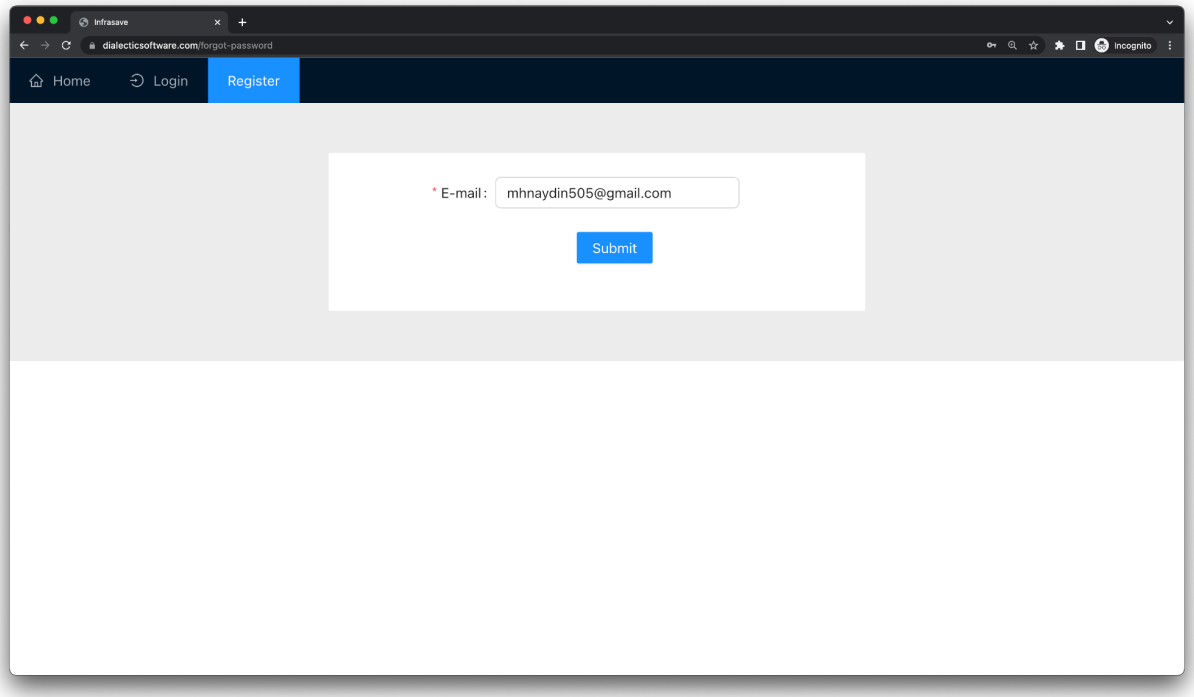
Login Page:



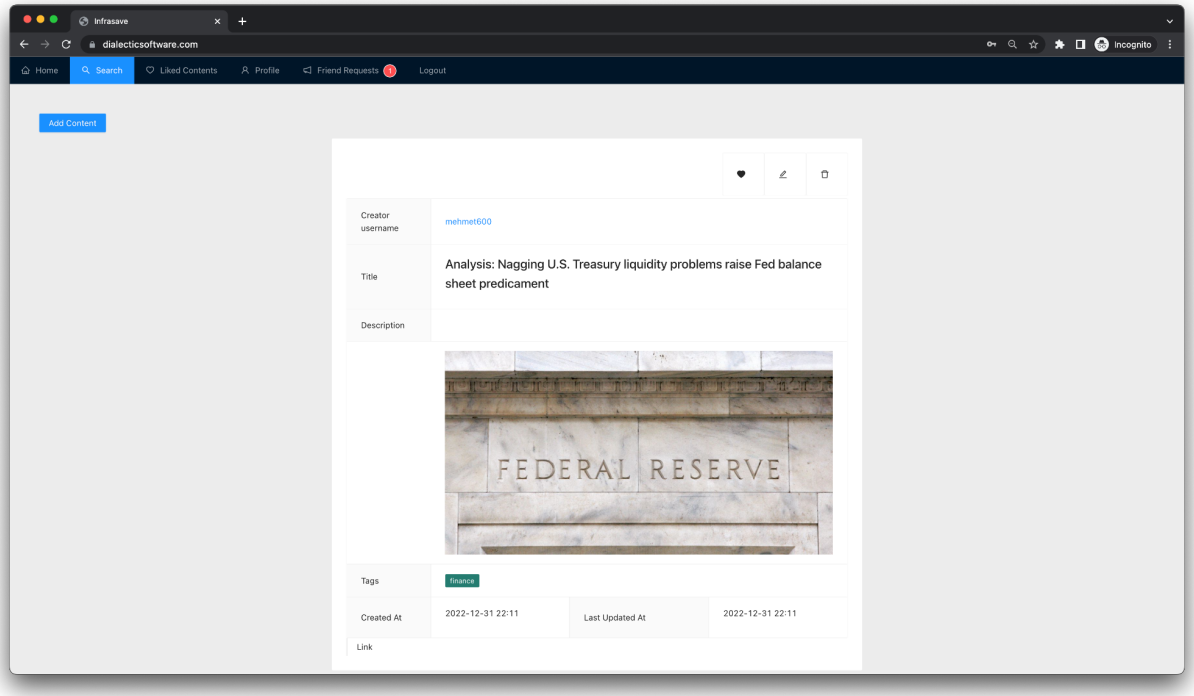
Register Page:



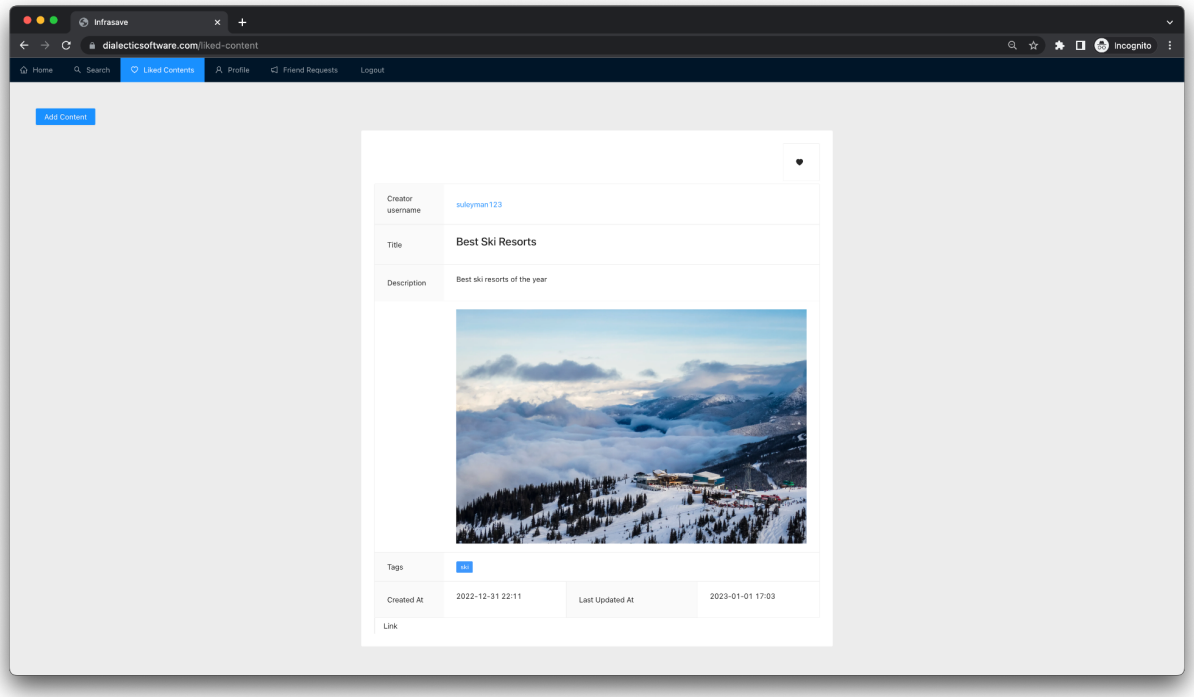
Forgot Password Page:



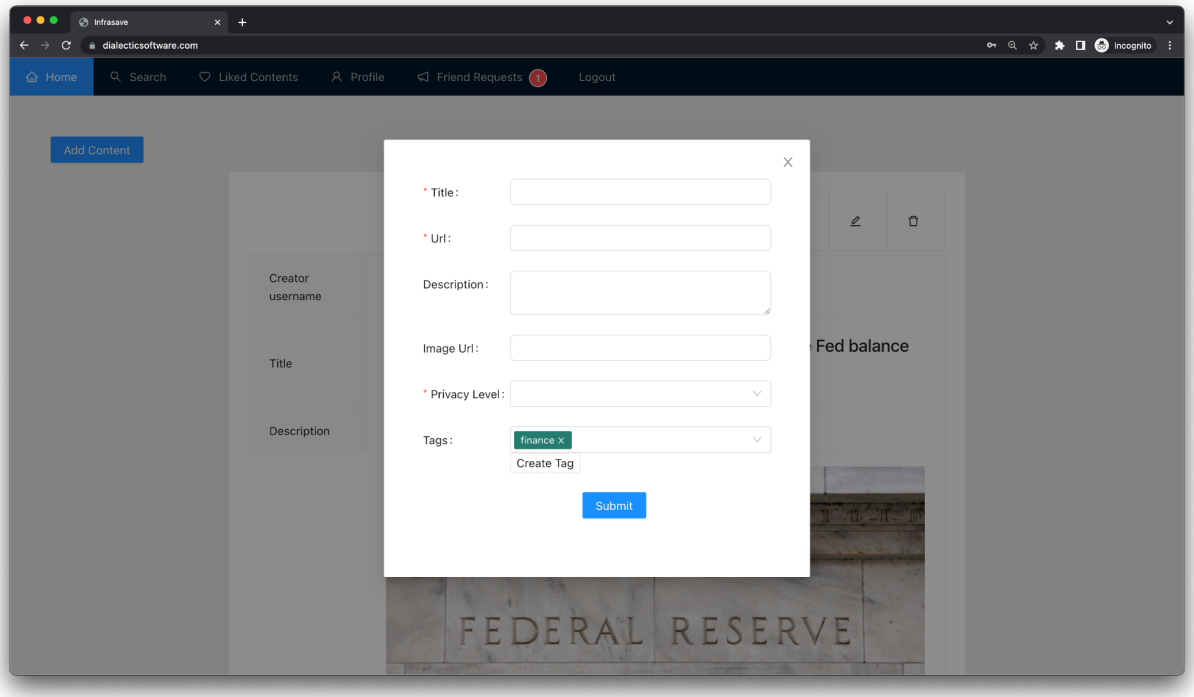
Home Page:



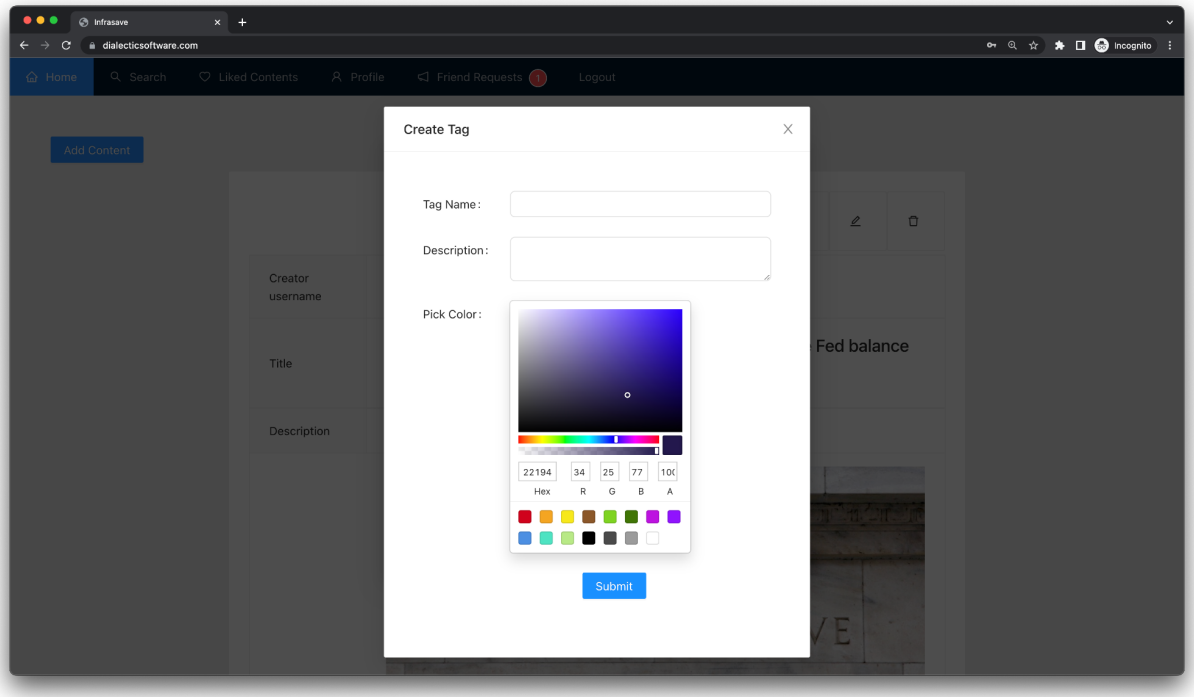
Liked Contents:



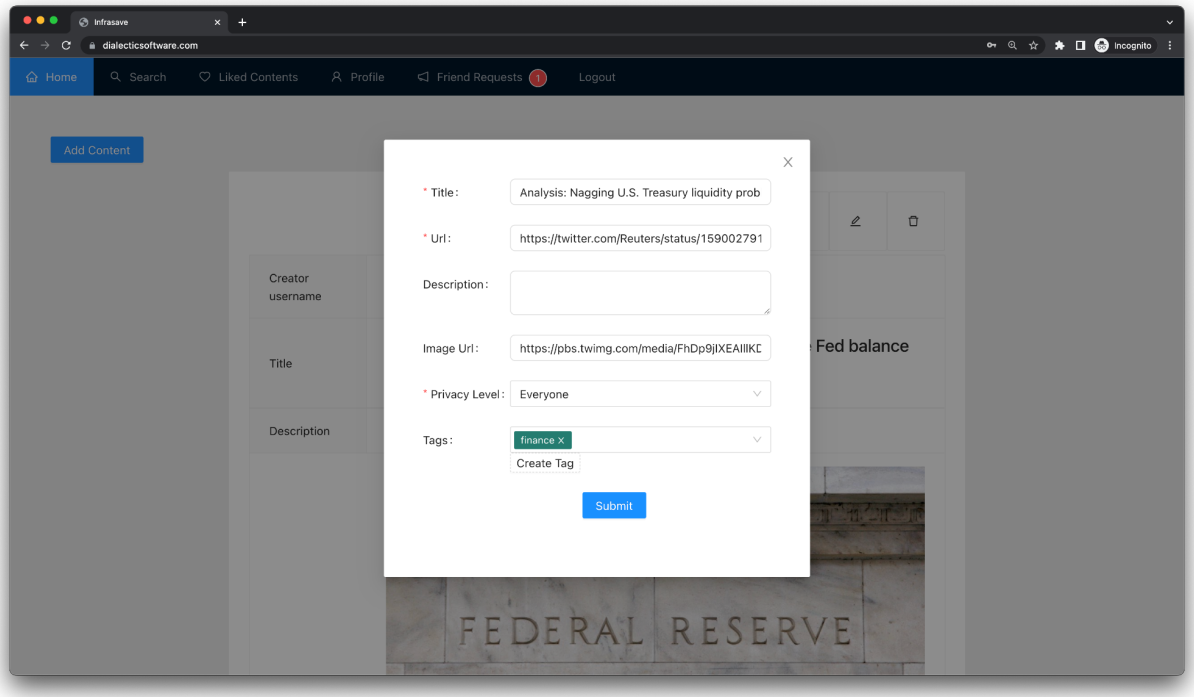
Add Content:



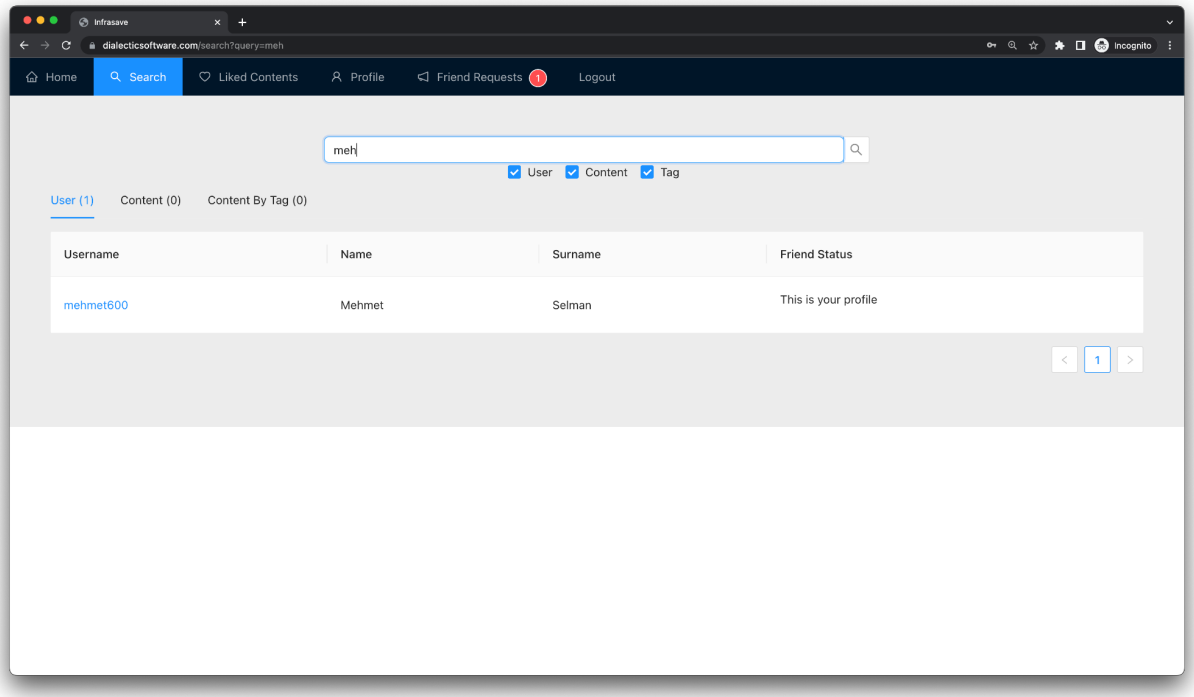
Create Tag:



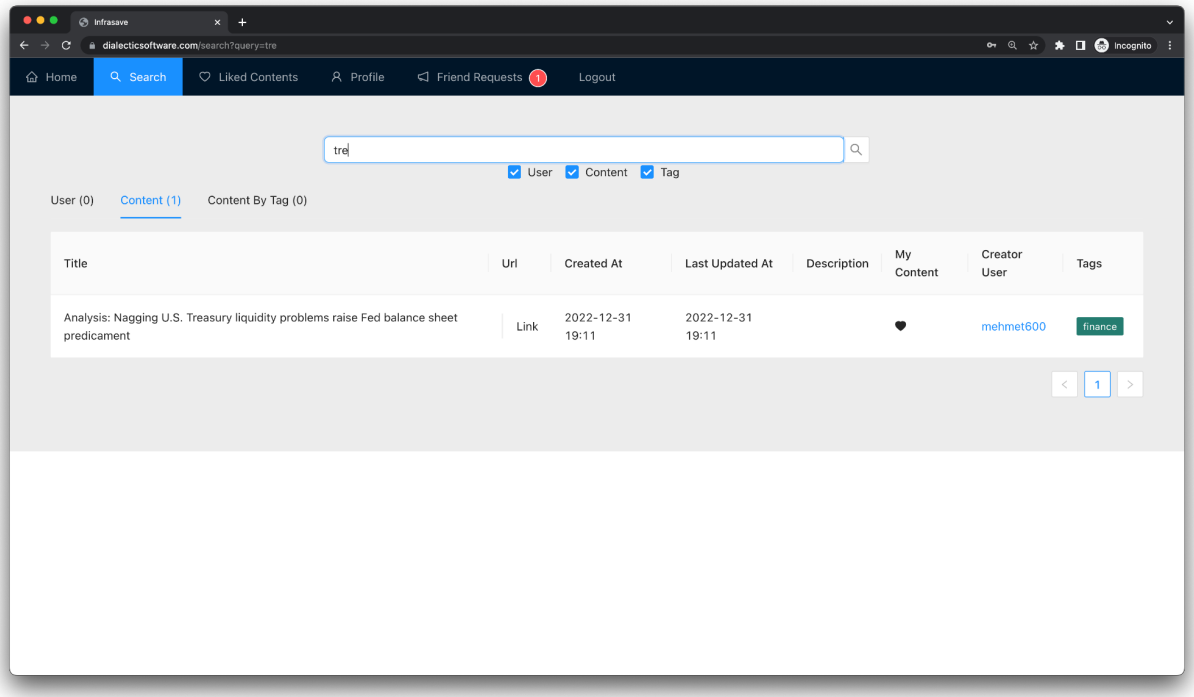
Modify Content:



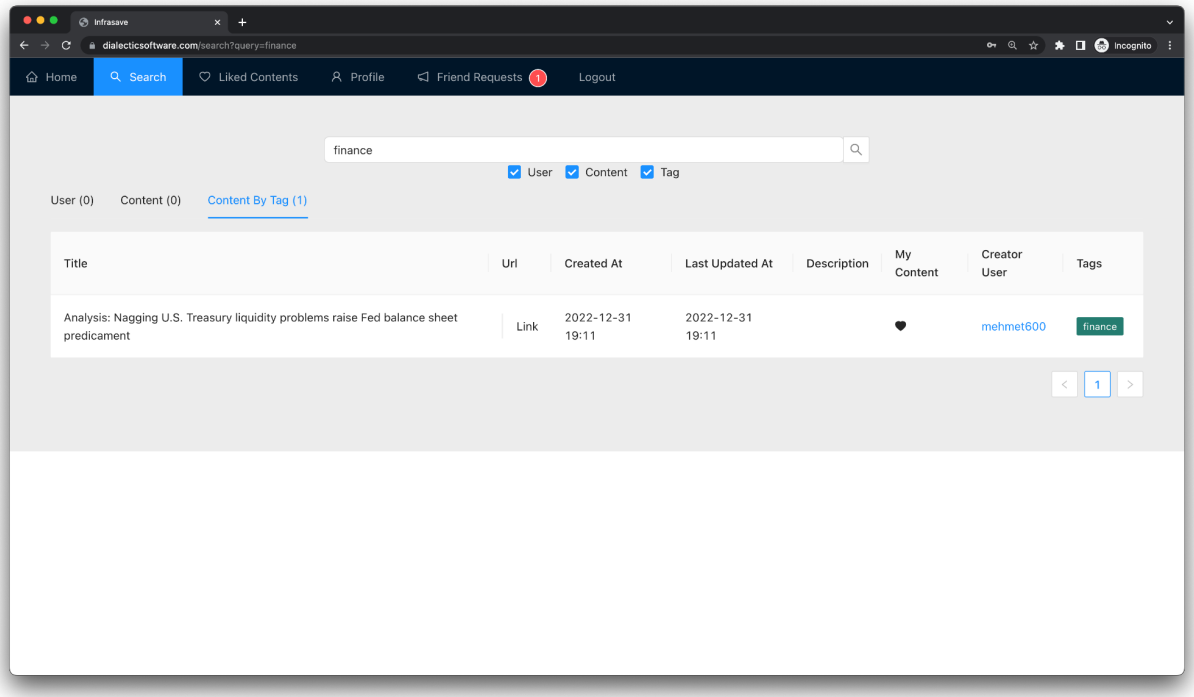
Search User:



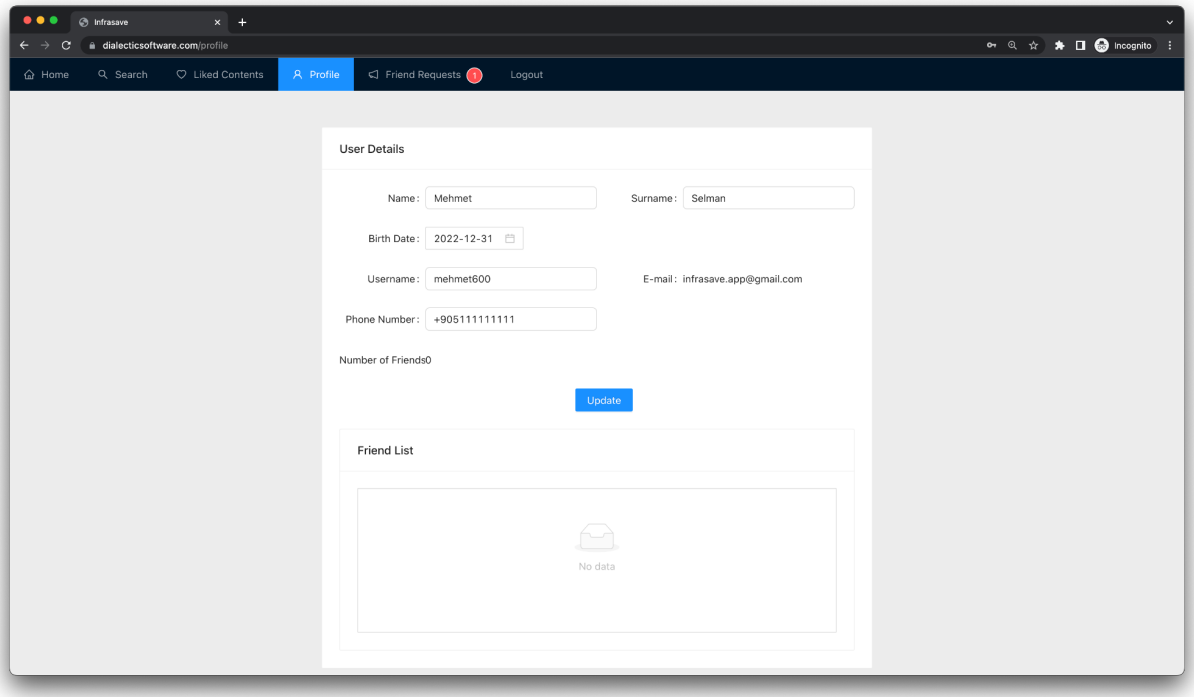
Search Content:



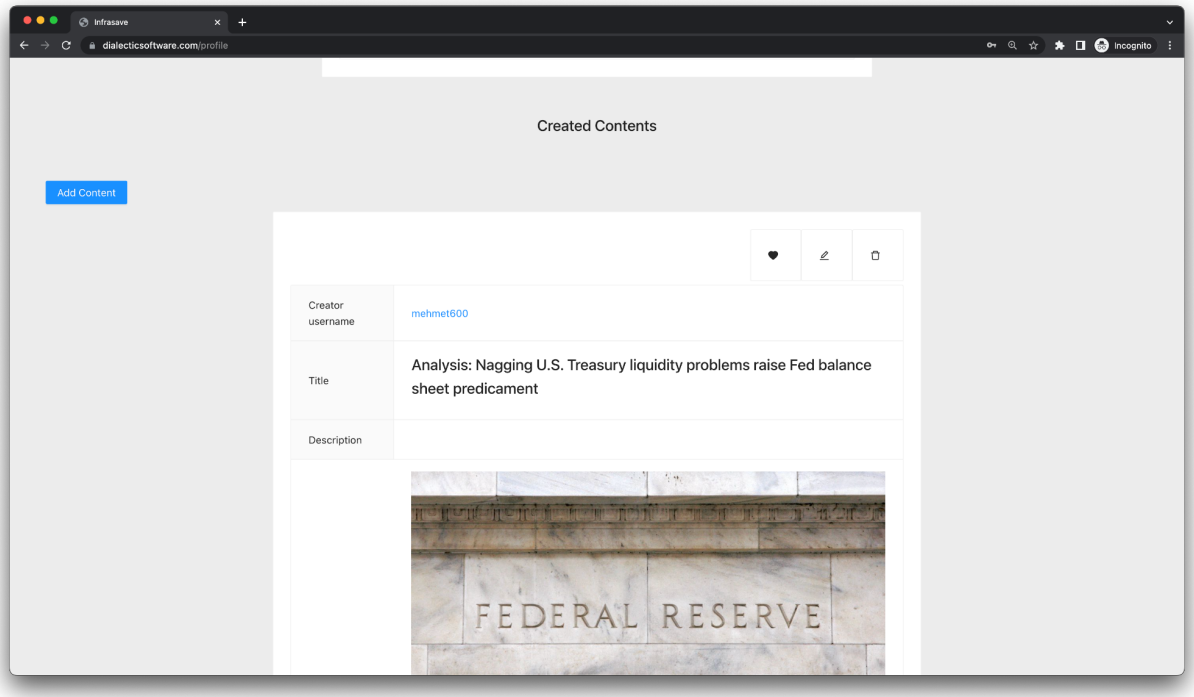
Search Content by Tag:



Profile:



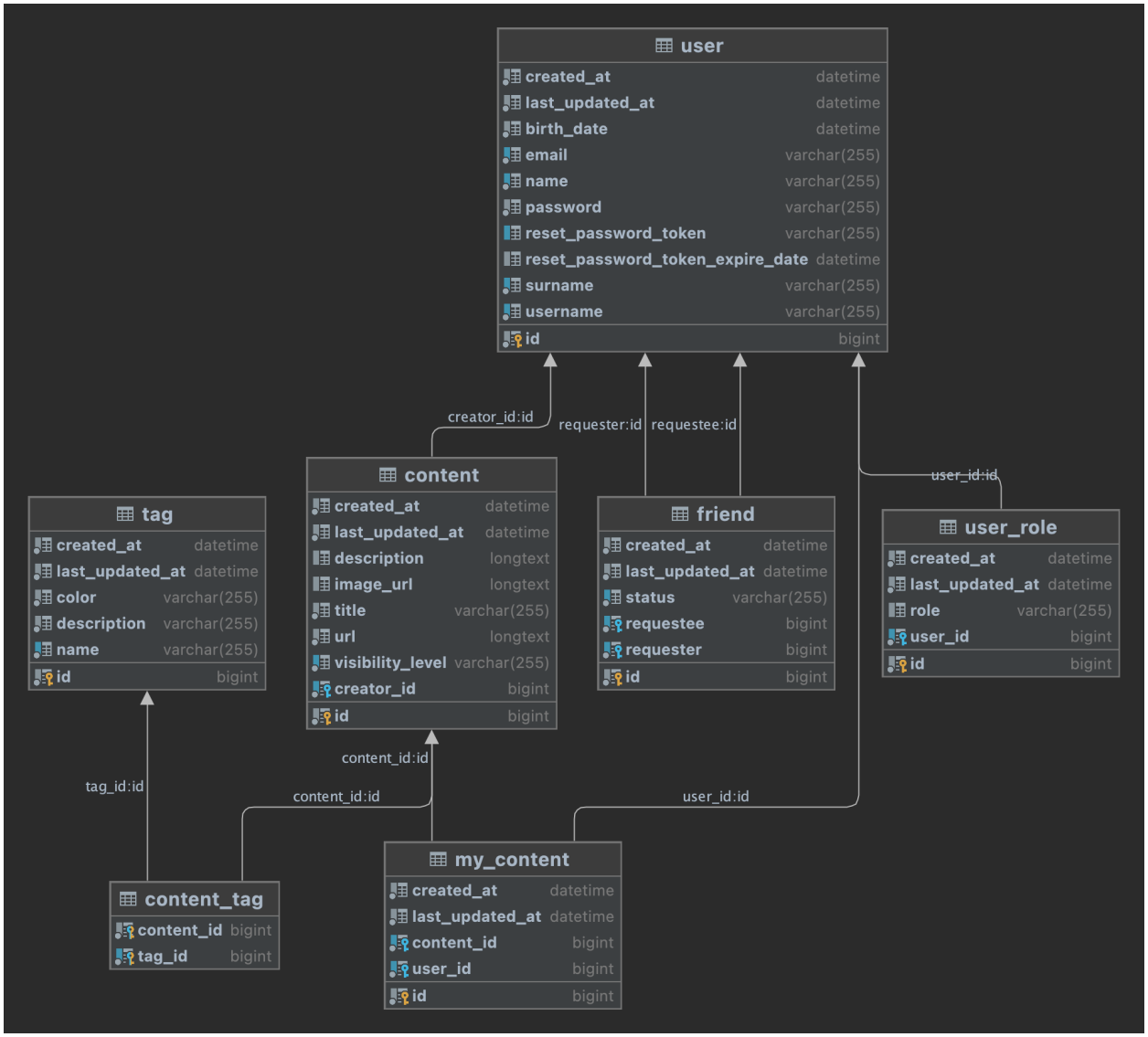
Profile Created Contents:



Application Presentation

Application presentation video link: https://www.youtube.com/watch?v=i-jGzhF3Gxc

UML Diagram


user
created_at datetime
last_updated_at datetime
birth_date datetime
email varchar(255)
name varchar(255)
password varchar(255)
reset_password_token varchar(255)
reset_password_token_expire_date datetime
surname varchar(255)
username varchar(255)
id bigint
creator_id:id
requester:id
requestee:id
user_id:id
content
created_at datetime
last_updated_at datetime
description longtext
image_url longtext
title varchar(255)
url longtext
visibility_level varchar(255)
creator_id bigint
id bigint
tag
created_at datetime
last_updated_at datetime
color varchar(255)
description varchar(255)
name varchar(255)
id bigint
friend
created_at datetime
last_updated_at datetime
status varchar(255)
requestee bigint
requester bigint
id bigint
user_role
created_at datetime
last_updated_at datetime
role varchar(255)
user_id bigint
id bigint
content_id:id
tag_id:id
content_id:id
user_id:id
my_content
created_at datetime
last_updated_at datetime
content_id bigint
user_id bigint
id bigint
content_tag
content_id bigint
tag_id bigint

Test Results

I have developed integration tests for all of the functionalities in the application. These test classes will greatly help me when I modify or develop more functionality in the application.

- Improved reliability and robustness: With these Integration tests we can identify issues that may not have been discovered. By testing how different components work together, integration tests can uncover issues that may arise when the system is used in a real-world environment. That's why I have developed integration tests.
- Enhanced confidence in the system: Integration tests provide a higher level of confidence in the system's functionality and its ability to handle real-world scenarios. This can be especially important when releasing new features or making changes to the system.
- Easier debugging: Integration tests can help identify the root cause of issues more quickly, as they provide more context around how different components are interacting with each other.
- Better coverage: Integration tests can help ensure that the system is thoroughly tested and that all relevant scenarios are covered. This can help reduce the risk of defects or issues being missed during testing.

com.infrasave in infrasave-rest-app: 25 total, 25 passed 5.82 s

Collapse | Expand

AccountIntegrationTests		2.66 s
shouldLogin()	passed	971 ms
shouldFailLogin()	passed	201 ms
shouldRegister()	passed	1.46 s
shouldFailRegister()	passed	28 ms
ContentIntegrationTests		709 ms
saveUser()	passed	97 ms
shouldGetMyFeed()	passed	235 ms
shouldCreateContent()	passed	128 ms
shouldUpdateContent()	passed	130 ms
shouldDeleteContent()	passed	119 ms
FriendIntegrationTests		1.14 s
shouldLogin()	passed	463 ms
shouldSendFriendRequest()	passed	122 ms
shouldGetPendingFriendRequest()	passed	118 ms
shouldApprovePendingFriendRequest()	passed	122 ms
shouldGetApprovedFriends()	passed	107 ms
shouldRemoveFriend()	passed	104 ms
shouldGetEmptyApprovedFriends()	passed	104 ms
TagIntegrationTests		660 ms
shouldLogin()	passed	286 ms
shouldCreateTag()	passed	108 ms
shouldCreateContent()	passed	149 ms
shouldGetMyFeedWithTag()	passed	117 ms
LikedContentIntegrationTests		646 ms
saveUser()	passed	101 ms
shouldCreateContent()	passed	206 ms
shouldAddToLikedContent()	passed	111 ms
shouldGetLikedContents()	passed	121 ms
shouldDeleteContent()	passed	107 ms

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Current scope: all classes

Overall Coverage Summary

Package	Class, %	Method, %	Line, %
all classes	63.8% (44/69)	34% (111/326)	25.3% (263/1039)

Coverage Breakdown

Package	Class, %	Method, %	Line, %
com.infrasave	100% (1/1)	25% (1/4)	1.3% (1/79)
com.infrasave.bean	25% (5/20)	31.2% (25/80)	28.7% (39/136)
com.infrasave.config	87.5% (7/8)	85.7% (24/28)	81.2% (69/85)
com.infrasave.controller	100% (8/8)	27% (10/37)	19.7% (28/142)
com.infrasave.controller.admin	100% (1/1)	50% (1/2)	22.2% (2/9)
com.infrasave.entity	100% (7/7)	35.6% (26/73)	37.3% (28/75)
com.infrasave.enums	66.7% (2/3)	40% (4/10)	42.9% (9/21)
com.infrasave.exception	0% (0/6)	0% (0/9)	0% (0/13)
com.infrasave.repository.content	100% (1/1)	16.7% (1/6)	5.9% (2/34)
com.infrasave.repository.friend	100% (1/1)	50% (1/2)	33.3% (2/6)
com.infrasave.repository.mycontent	100% (1/1)	33.3% (1/3)	20% (2/10)
com.infrasave.repository.tag	100% (1/1)	100% (1/1)	100% (2/2)
com.infrasave.repository.user	100% (1/1)	44.4% (4/9)	38.1% (16/42)
com.infrasave.service	80% (8/10)	19.4% (12/62)	16.4% (63/385)

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Environment Variables

In order to build, test or deploy the project we must set environment variables on the operating system. That means we do not share sensitive information in the repository. Therefore, I will share environment variables below.

How to set environment variables?

We can set environment variables by modifying `bashrc` file located at `~/.bashrc`.
Copy and paste below code block to the file and logout and login again. Now you are all set. You can build, test, deploy the application.

```
export REACT_APP_BASE_URL=https://dialecticsoftware.com/api
export active_profile=prod
export datasource_url=
export datasource_username=
export datasource_password=
export mail_username=
export mail_password=
```

User Credentials For Test

Infrasave Application Credentials:

User ID	E-mail	Password
1	infrasave.app@gmail.com	123456
2	test@test2.com	123456

3rd Party Software

In order to view the license please click the software.

Frontend

Software	License
React	MIT License
Ant-Design	MIT License
Redux	MIT License
Axios	MIT License
React Router Dom	MIT License

Backend

Software	License
Java 17	NFTC
Spring Framework	Apache License 2.0
Hibernate	LGPL 2.1
MySQL	FOSS

How to Build The Project for Development?

You can use make or manual commands to build the application.make command can be installed via brew install make

Requirements

- Docker and docker-compose
- Java 17

1. Build Frontend

Run

```
make build-frontend
```

or

```
infrasave/infrasave-react-client/node/npm ci --prefix
infrasave/infrasave-react-client &&
infrasave/infrasave-react-client/node/npm start --prefix
infrasave/infrasave-react-client
```

2. Launch Database and Create Schema

Run

```
make build-db
```

or

```
docker-compose -f infrasave/docker-compose-local.yml up -d db
```

3. Build Backend

Run

```
make build-backend
```

or

```
cd infrasave/infrasave-rest-app && ./mvnw spring-boot:run
```

Now you can access application with the following link:

- http://localhost:3000

Local Dev Environment With Docker

You can use this type of build process in order to test or examine the application.

- Run following command

```
docker-compose -f infrasave/docker-compose-local.yml build && \
docker-compose -f infrasave/docker-compose-local.yml create && \
docker-compose -f infrasave/docker-compose-local.yml start
```

Now you can access application with the following link: http://localhost:3000

Prod Environment

- Remove local images with following command

```
docker-compose -f infrasave/docker-compose.yml down --remove-orphans --rmi
all --volumes
```

- You must set environment variables in your operations system for following properties
- Please contact owner of the repository in order to get value of the below environment variables.

```
export REACT_APP_BASE_URL=https://dialecticsoftware.com/api
export active_profile=
export datasource_url=
export datasource_username=
export datasource_password=
export mail_username=
export mail_password=
```

- Run following command

```
 docker-compose -f infrasave/docker-compose.yml up -d
```

Now you can access application with the following link: http://localhost:3000