

CSCE 606 Final Report
Apartment Finder
by
The Code Bros

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Project Summary

This system is built under JJ Group Lease, an agent group that provides housing services for international students. Target users of this system are people who would like to rent an apartment in College Station, Austin, and Houston, such as students at Texas A&M. JJ wants to completely rebuild their website for increased visibility and better accessibility, and they also want their website to serve as a CRM (Customer Relation Management) platform. After a few meetings with JJ, they requested several key features that they want integrated in their website:

- Dynamic boardmap that updates the available properties in real time
- Login system for different types of users (Admin and customer)
- Appointment scheduling system

The above three key features have been implemented and met the requirements as described below:

- Dynamic boardmap that updates the available property in real time:
Displayed via a bootstrap card that displays relevant apartment information fetched from a maintained backend server. Only the admin is able to edit the information for the card
- Login system for different types of users (Admin and customer):
Built a login system for both customers and admins. On the admin side, admins can edit apartment information. On the customer side, customers can schedule appointments with our client, JJ Group Lease.
- Appointment scheduling system:
We used Calendly, a third party application, to build a scheduling system. This application is natively embedded in our application.

In addition, some auxiliary functions are also implemented to enable these features, such as signup and login.

User Stories

Iteration 0 and 1

- *Provide contact form:* Junru Liu (3 points)

Users can contact JJ by sending them messages as contact forms to ask JJ questions

Contact Form

Location
College Station

Topic
apartment special offers

Message
enter your question

Submit

- Add navigation bar: Lucas Lyu (2 points)

Users can conveniently understand the functions in this system via a navigation bar

JJtxhome Home Leasing Contact Us Login

- Present frequently asked questions: Kaiyuan Gao (1 point)

Users can view frequently asked questions and their answers

Frequently asked questions

What's JJ GroupLease? JJ团租是什么组织?

Why choosing JJ GroupLease? 为什么选择JJ团租?

What are our strengths? 我们的优势是什么?

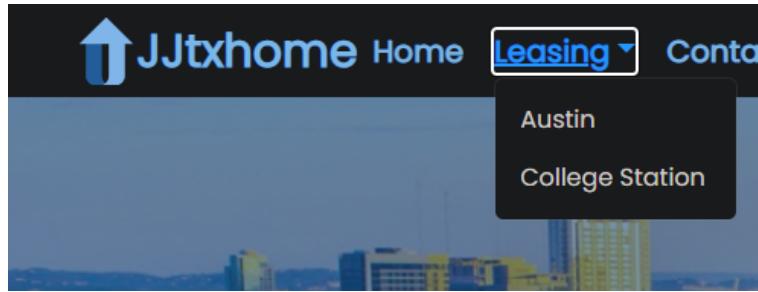
How to apply through JJ GroupLease? 那通过JJ团租租房的步骤是什么样的?

What supporting documents are required to rent a room in Texas? 德州租房子需要哪些文件呢?

Iteration 2

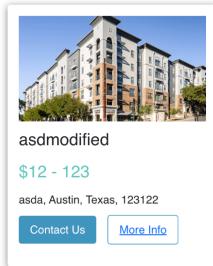
- Separate leasing information by city: Lucas Lyu, Kaiyuan Gao (2 points, 1 point/person)

Users can view leasing information by cities.



JJtxhome Home Leasing Contact Us wulalaia ▾

Apartments (UT校园附近公寓)



Individual Leases (獨棟房子)

A screenshot of a real estate search interface from "AUSTIN Board of REALTORS". The map shows the Austin area with various neighborhoods labeled. On the right side, there are four thumbnail images of houses, each with a price, address, and a "Listed 3 days ago" or "Updated 3 hours ago" note. The top of the page has a search bar, filters for "Buy", "Rent", "Commercial", and "Log In".

- Host full-stack app on AWS: Hanson Yu (3 points)
- Customer login: Winston Liu, Pengcheng Liao (3 points)

Users need to log in to the system to use the functions

Login

Email:

password:

Login as Admin

Login



[Sign Up](#)

[Forgot Password](#)

- Change password: Winston Liu, Pengcheng Liao (3 points)

Users can change their passwords later after registration

Change Password

Old password:

New password:

Repeat password:

submit

- Customer signup: Junru Liu (3 points)

Users need to register an account to use the system

The screenshot shows the JJtxhome website's sign-up page. At the top, there is a navigation bar with links for Home, Leasing (with a dropdown arrow), Contact Us, and Login. Below the navigation is a large, scenic photograph of a city skyline at dusk or night, reflected in a body of water. To the right of the image is a sign-up form titled "Sign Up". The form fields include:

- Username: enter your username
- Password: enter your password
- Repeat Password: repeat your password
- Email: enter your email
- Phone: enter your phone
- Gender: Male (with a dropdown menu)
- Date of Birth: 12/10/2022 (with a date input field)
- Security Question: What is your mother's last name? (with a dropdown menu)
- Your Answer: enter your answer (with a text input field)

A blue "Submit" button is located at the bottom of the form.

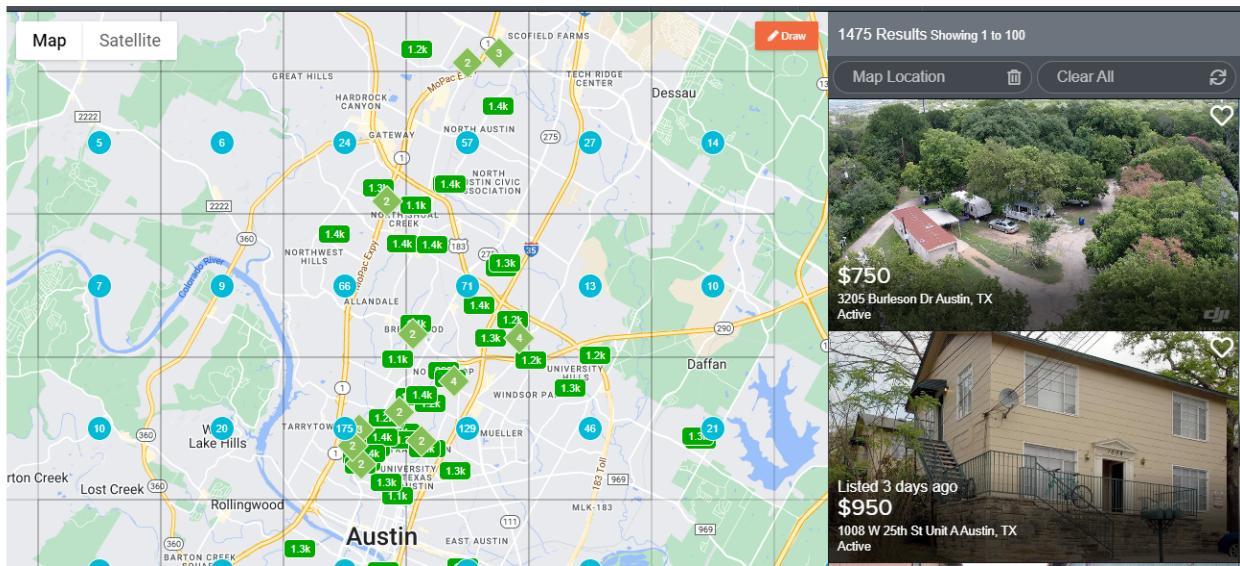
- Home page: Lucas Lyu (3 points)

The system displays a homepage to show JJ Group Lease

Iteration 3

- Embedded individual housing API: Kaiyuan Gao (3 points)

Users can view leasing information of individual houses on the map



- Forget Password: Zixi Liu and Pengcheng Liao (3 points)

User can change their password if they forgot it by answering the security question they set up

Security Question

Email:

submit

Security Question

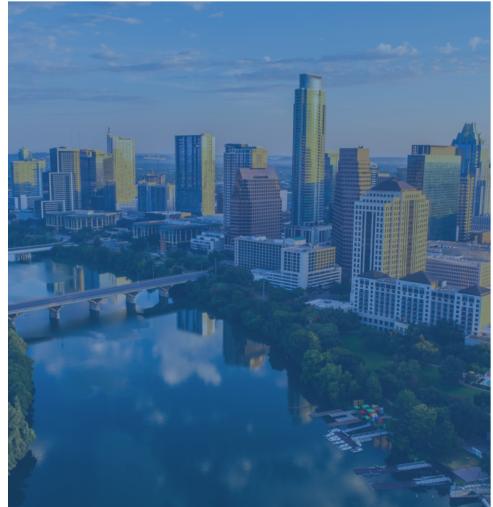
what is your mother's last name

new password

submit

- View and Update Customer Account Info: Junru Liu (3 points)
Users can view and update their personal information after login

 JJtxhome Home Leasing ▾ Contact Us wulalala ▾



My Profile

Username:

Password: Change My Password

Email:

Phone:

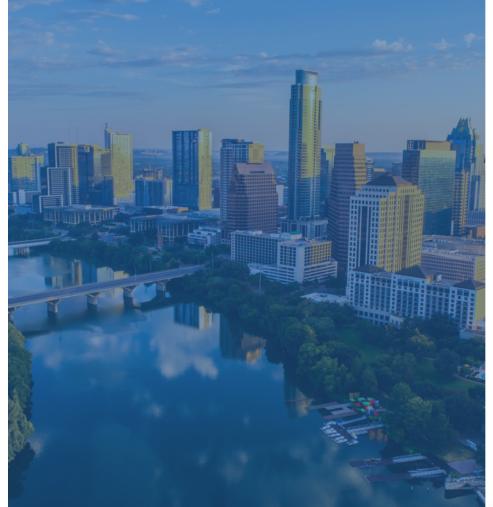
Gender:

Date of Birth:

Security Question:

Your Answer:

 JJtxhome Home Leasing ▾ Contact Us wulalala ▾



My Profile

Username:

Password: Change My Password

Email:

Phone:

Gender:

Date of Birth:

Security Question:

Your Answer:

- Configure settings (CI/CD pipeline: Hanson Yu (2 points)

Iteration 4

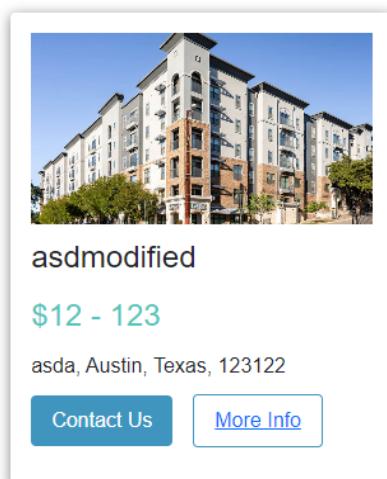
- Admin add apartment information: Zixi Liu and PengCheng Liao (3 points, 1.5 point per person)

The administrator can add new apartment information into the apartment database

Add New Apartment

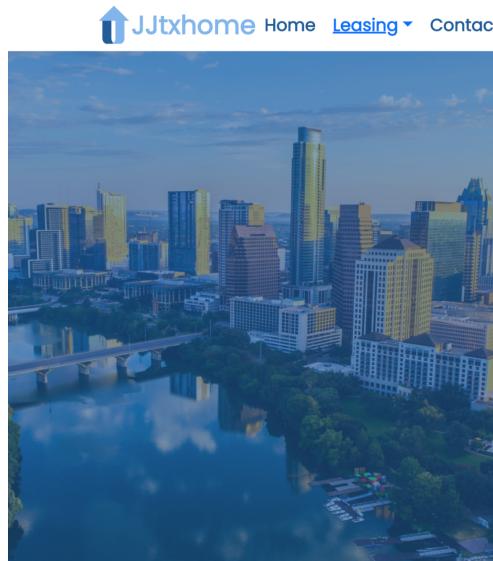
Name	<input type="text"/>	
City	College Station	
Street	<input type="text"/>	
Zip Code	<input type="text"/>	
Price	<input type="button" value="lowest"/>	<input type="button" value="highest"/>
URL	<input type="text"/>	
Pic URL	<input type="text"/>	
<input type="checkbox"/> near campus: <input type="checkbox"/> furnished: <input type="checkbox"/> free parking: <input type="checkbox"/> <input type="checkbox"/> free water/electricity: <input type="checkbox"/> free internet: <input type="checkbox"/>		
<input type="button" value="submit"/>		

- List detailed information about apartment: Kaiyuan Gao and Pengcheng Liao (3 points, 1.5 point/person)



- Admin login: Lucas Lyu (3 points)

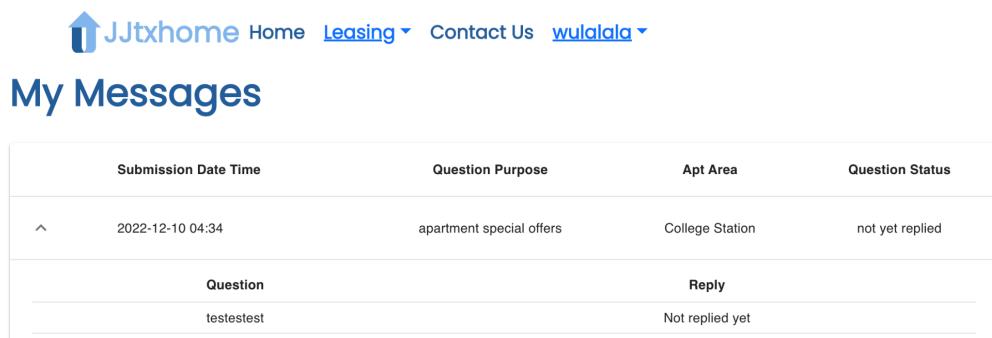
Administrators can log in to the system to perform database operations



The login page features a large, scenic photograph of the Austin, Texas skyline at dusk or night, with the Colorado River in the foreground. The JJtxhome logo is in the top left corner. The main form area has a light blue header labeled "Login". It contains fields for "Email" and "password", a checked checkbox for "Login as Admin", and a blue "Login" button. Below the form is a CAPTCHA field with the text "UAAGH" and buttons for "Sign Up" and "Forgot Password".

- View my messages (3 points by Junru Liu)

Users can view their previously submitted messages and view their replies if any



The "My Messages" page shows a table of user submissions. The columns are "Submission Date Time", "Question Purpose", "Apt Area", and "Question Status". One row is shown, indicating an unanswered message about apartment special offers from College Station.

Submission Date Time	Question Purpose	Apt Area	Question Status
2022-12-10 04:34	apartment special offers	College Station	not yet replied
Question		Reply	
testestest		Not replied yet	

- Configuration settings CI/CD pipeline, build, redirects: Hanson Yu (3 points)

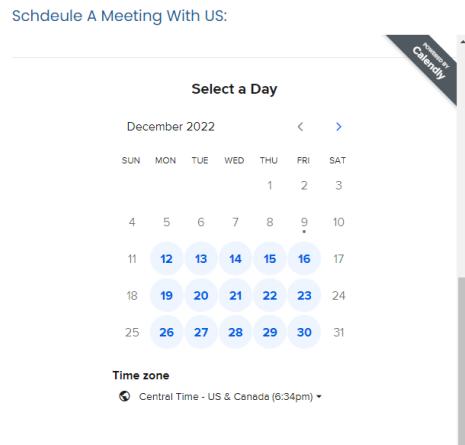
Iteration 5

- Admin edit, delete, search apartment information: Zixi Liu and PengCheng Liao (7 points, 3.5/person)

Administrators can edit, delete and search current apartment information

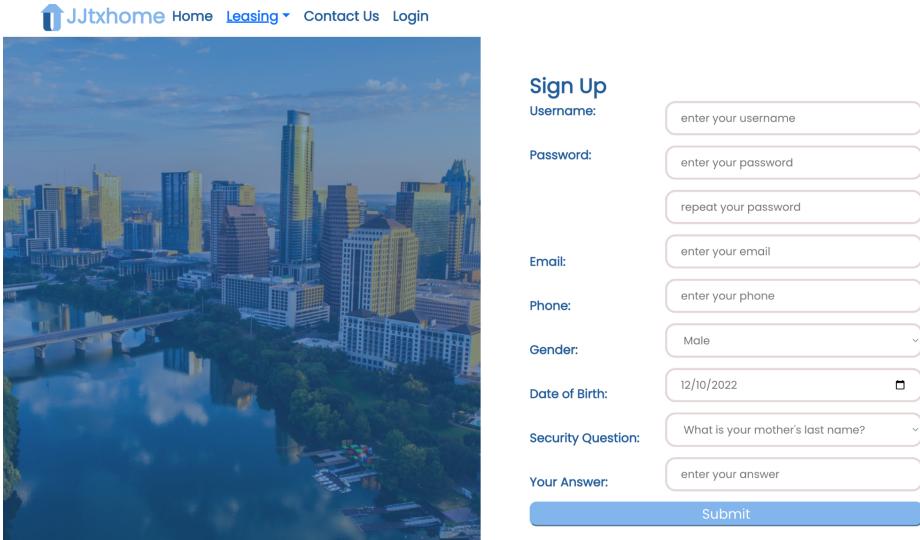


- Migrating database to cloud: Kaiyuan Gao and Hanson Yu (6 points, 3 points/person)
- Add scheduling feature: Kaiyuan Gao (3 points)



- Implement Account Security Question: Junru Liu (3 points)

Users need to set up a security question during signup to increase account security



The image shows a screenshot of the JJtxhome website. At the top, there is a navigation bar with links for Home, Leasing (with a dropdown arrow), Contact Us, and Login. Below the navigation bar is a large, vibrant photograph of a city skyline at dusk or night, reflected in a body of water. To the right of the image is a sign-up form titled "Sign Up". The form includes fields for Username, Password, Email, Phone, Gender (Male), Date of Birth (12/10/2022), Security Question (What is your mother's last name?), and Your Answer. A "Submit" button is located at the bottom of the form.

- Admin reply contact form, Admin Message Center: Xinlou Lyu (5 points)

Administrator will reply to users' submitted contact forms and answer their questions

My Messages

Submission Date Time	Question Purpose	Apt Area	Question Status
2022-12-06 18:00	apartment special offers	College Station	not yet replied
Question	Reply		
11111	Type your reply here... <input type="button" value="Submit"/>		

- Add robot check when logging in: Zixi Liu and PengCheng Liao (2 points, 1/person)

In order to avoid being attacked by robot, we add a robocheck when log in



- Custom domain configuration settings: Hanson Yu (3 points)

Team Members & Roles

Kaiyuan (Kelvin) Gao (Scrum Master for i0, Product Owner for i1, and Developer)

Hanson Yu (Scrum Master for i1, Product Owner for i0, and Developer)

Pengcheng Liao (Scrum Master for i2, Product Owner for i3, and Developer)

Junru Liu (Scrum Master for i3, Product Owner for i2, and Developer)
Winston Liu (Scrum Master for i4, Product Owner for i5, and Developer)
Lucas Lyu (Scrum Master for i5, Product Owner for i4, and Developer)

Iteration Summary

Iteration 0

- Talked to our customer JJ Group Lease and confirmed project purposes and main features
- Talked to our customer JJ Group Lease and discussed initial user stories
- Created lo-fi UI sketches
- Set up project Github, Pivotal Tracker, and Teams

Iteration 1

- *Provide contact form:* Junru Liu (3 points)
- *Add navigation bar:* Lucas Lyu (2 points)
- *Present frequently asked questions:* Kaiyuan Gao (1 point)
- *Chores Deployment, lo-fi UI updates, diagram drawing:* Winston Liu, Hanson Yu, Pengcheng Liao

Iteration 2

- Separate leasing information by city: Lucas Lyu, Kaiyuan Gao (2 points, 1 point/person)
- Host full-stack app on AWS: Hanson Yu (3 points)
- Customer login: Zixi Liu, Pengcheng Liao (3 points)
- Change password: Zixi Liu, Pengcheng Liao (3 points)
- Customer signup: Junru Liu (3 points)

Iteration 3

- Embedded individual housing API: Kaiyuan Gao (3 points)
- Forget Password: Zixi Liu and Pengcheng Liao (3 points)
- View and Update Customer Account Info: Junru Liu (3 points)

Iteration 4

- Admin add apartment information: Zixi Liu and PengCheng Liao (3 points, 1.5 point/person)

- List detailed information about apartment: Kaiyuan Gao and Pengcheng Liao (3 points, 1.5 point/person)
- Admin login: Lucas Lyu (3 points)
- View my messages (3 points by Junru Liu)
- Configuration settings CI/CD pipeline, build, redirects: Hanson Yu (4 points)
- Chores CSS Updates:
 - Zixi Liu (Login, ForgetPassword, ChangePassword, Admin edit apartment info)
 - Lucas (contact form, homepage, footer)
 - Junru Liu (my profile, sign up, view/update customer info)

Iteration 5

- Admin edit, delete, search apartment information: Zixi Liu and PengCheng Liao (7 points, 3.5/person)
- Migrating database to cloud: Kaiyuan Gao and Hanson Yu (3 points, 1.5 points/person)
- Add scheduling feature: Kaiyuan Gao (3 points)
- Implement Account Security Question: Junru Liu (3 points)
- Admin reply contact form, Message Center: Lucas Lyu (5 points)
- Add robot check when logging in: Zixi Liu and PengCheng Liao (2 points, 1/person)
- Database cloud configuration: Kaiyuan Gao and Hanson Yu (3 points, 1.5 points/person)
- Custom domain configurations: Hanson Yu (3 points)

Final report, Demo, and Presentation

- Demo and Presentation: Kaiyuan Gao and Zixi Liu (6 points, 3 points/person)
- Final reports: Everyone (12 points, 2 points/person)

Meetings with Customer

10/4/2022:

- Collecting and categorizing assets given by our clients (Determined what apartments they have in Austin, College Station)
- Further discusses the user stories: added new ones and modified current ones

10/13/2022:

- Further discusses the user stories: added new ones and modified current ones

11/2/2022:

- Determine how they want to implement the individual house listing feature of the website.
- Demonstrated our solutions for the features, which the JJ group are satisfied with.

11/11/2022:

- Showcased individual listing for the city of College Station and Austin
- Discussed the *schedule appointment* feature

11/22/2022:

- Demonstrated how to use Calendly to accomplish the *schedule appointment* feature

TDD Process

Our team mainly employed test driven development approaches where we created the test cases first and then wrote the code underlying those test cases. Some benefits of this strategy that we saw was high test coverage (greater than 90%), quality of code with little defects, and code that is highly flexible and reusable. However some of the problems with this test driven development approach was that it tended to take more time for development and writing test cases prior to writing the code was rather challenging.

Configuration Management

Our configuration management was done primarily through a combination of the following platforms: GitHub, AWS, and Heroku. The primary source for configuration management is with GitHub where all our teams' information and assets are stored and tracked. Through automation by enabling CI/CD workflows in both AWS and Heroku with GitHub, all relevant build and runtime information is also tracked and stored on the respective platforms. In total we had on the order of 20 branches that contained many features. We had a total of 5 releases/tags (iterations 1 through 5) where the "main" branch contained the release for each iteration.

Issues Encountered

Production release process to Heroku

Our frontend is a react application that was originally meant to be deployed on Heroku. However, when we deployed the frontend application to Heroku, we faced a lot of problems. We spent a lot of time configuring the Procfile but it still did not work. We then later decided to switch to AWS Amplify to host the frontend application with CI/CD. Our backend and database is still ultimately hosted on Heroku.

When using AWS Cloud9 and GitHub and other tools.

Our backend is a Django app and did not integrate well with Amplify hosting environments so we had to try different hosting methods. We tried multiple methods including AWS Elastic BeanStalk, EC2, and S3 but none of these solutions worked. Most notably, when querying the backend, deployments within some hosting environments had security certificate issues. We then decided to go back to Heroku to host the Django app. Ultimately our configuration for Heroku was the free tier with addons to host a live MySQL database (also perfect for testing development). Eventually, we were able to successfully deploy the backend with CI/CD on Heroku.

Other Tools

Pivotal Tracker

Pivotal Tracker is an agile project management tool with real-time collaboration around a shared, prioritized backlog. We primarily used this tool to create and track our user stories. Pivotal Tracker also allows meta information to be associated with the user story like assignees, priority, and point value. This greatly helped with keeping track of user stories and progress.

Coverage.py

Coverage.py is a tool for measuring code coverage of Python programs and its measurement is typically used to gauge the effectiveness of tests. It monitors the program, notes which parts of the code have been executed, and then analyzes the source to identify code that could have been executed but was not.

Repo Contents & Deployment

The repo contains the code required to run this project, with the code for frontend under directory *frontend*, and the remaining being code for backend.

To deploy this project locally:

1. Git clone this repository
2. Create a virtual Python environment
3. Install Python libraries in the requirements.txt: *pip install -r requirements.txt*
4. Create a mysql database locally and modify lines 141 - 150 accordingly in *jjleasegroup/apartment_finder/settings.py*
5. Go to the directory jjleasegroup/frontend/, install dependencies required for frontend: *npm install*
6. Modify line 1 in jjleasegroup/frontend/src/api/APIService.js to the localhost url
7. Perform database migrations: *python manage.py migrate*
8. Start the backend: *python manage.py runserver*
9. Start the frontend:
 - a. *npm start* (in dev mode)
 - b. *npm test* (in test mode)
 - c. *npm run build* (to build the app for production to the *./build* folder)

External Links

Pivotal Tracker

<https://www.pivotaltracker.com/n/projects/2595494>

Github Repo

<https://github.com/tamu-edu-students/jjleasegroup>

Deployed App

<https://jjleasegroup.org/>

Presentation Video

https://drive.google.com/file/d/1HytvTJOQ2YkzoZlipydxJSF58sF1ONqWQ/view?usp=share_link

Demo Video

https://drive.google.com/file/d/1HytvTJOQ2YkzoZlipydxJSF58sF1ONqWQ/view?usp=share_link