ATX Assist
Group 10 Phase II Technical Report

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Website Link

http://www.atxassist.me/

Motivation

As Austin sees a growing influx of residents, an increasing number of low-income communities are facing displacement due to gentrification. This has caused the cost of living to soar, putting many individuals and families in difficult positions. Our project seeks to establish a dedicated space for underserved communities to learn about essential resources. By connecting Austin residents to information about affordable food, clothes, and housing, we hope to make an impact in our local community.

User Stories

Phase I:

Show a picture of an example of a thrift store on the home page

In response to this user story, we created a card for each of our models at the bottom of the home page. We feature an image of a thrift store on the thrift store card, which offers a sneak peek and serves as an engaging entry point for users.

Display a small slogan / title in big text on the home page

In response to this user story, we displayed a succinct slogan on the home page that encapsulates the mission and purpose of our platform. This addition serves to create a strong initial impact and communicates the essence of our services to users at a glance.

Show the number of total instances for each model at the top of their pages

We added the total number of instances available at the top of each model page. This provides users with a quick reference point, allowing them to gauge the scope of information within each category – be it food pantries, thrift stores, or affordable housing.

Add a brief description for each model page explaining the model

To enhance user understanding, we included concise descriptions for each model in the cards at the bottom of the home page. Additionally, we added an even shorter description at the top of each model page, offering users a clear overview of each respective model.

Show a picture of an example food pantry on the home page

In response to this user story, we created a card for each of our models at the bottom of the home page. We feature an image of a food pantry on the food pantry card, which offers a sneak peek and serves as an engaging entry point for users.

Phase II:

When showing the rating attribute on the model pages, could you display "(rating) / 5" instead of "rating."

In response to the user story regarding the rating attribute, we implemented a change to display the rating in the format "(rating) / 5" instead of just "rating." This modification increases clarity for users, providing a standardized representation of the rating scale across all model pages.

Could you add a light mode button for at least for the home page?

Following this user story, we incorporated a light mode button on the home page. Users can now toggle between light and dark modes, allowing for a personalized and visually comfortable browsing experience.

Could you make the description at the top of the about page left aligned instead of center aligned?

We adjusted the layout to align the description on the about page to the left. This change increases readability and creates a more conventional and user-friendly presentation.

Would it be possible to describe some attributes of the models on their respective pages? It could maybe go under the number of options displayed.

We added a short sentence describing the attributes of each model on their respective pages. As suggested, we put it under the text that shows the number of instances for each model.

For pantries and thrift stores, could you display the number of ratings as its own row in the information table for each instance page?

In response to this user story, we display the number of ratings as its own row in the information table for pantries and thrift stores. This addition provides a quick reference to the popularity and user feedback for each instance.

RESTful API

https://documenter.getpostman.com/view/32820631/2sA2r545aP

Our RESTful API has endpoints to GET all food pantries, thrift stores, and affordable housing instances. This API also has endpoints to GET specific instances of these models.

The API endpoints are as followed:

1. GET all food pantries
    a. https://api.atxassist.me/get-all-food-pantries/
    b. Returns a list of all food pantries stored in the database
2. GET food pantry
    a. https://api.atxassist.me/get-food-pantry-id/
    b. Returns a specific instance of food pantry, identified by its id
3. GET all affordable housing
    a. https://api.atxassist.me/get-all-affordable-housing/
    b. Returns a list of all affordable housing stored in the database
4. GET affordable housing
    a. https://api.atxassist.me/get-affordable-housing-id/
    b. Returns a specific instance of affordable housing, identified by its id
5. GET all thrift stores
    a. https://api.atxassist.me/get-all-thrifts/
    b. Returns a list of all thrift stores stored in the database
6. GET thrift store
    a. https://api.atxassist.me/get-thrift-id/
    b. Returns a specific instance of thrift store, identified by its id

Frontend Architecture

Our frontend is a React.js app, and we're hosting through AWS S3. Currently, we have a home page, an about page, and 3 model pages. Our 3 model pages (food pantries, affordable housing, and thrift stores) have several model instances. Each instance points to a new page with a unique ID to provide more information on the instance.

How it's running:

In order to run our app, clone the repository and run the following commands:

1. npm install
    a. This will install all the packages needed to run our application
2. npm start
    a. This will run the application on a development server in order to start making changes to the site and seeing those changes

Structure:

Our frontend structure is that of the following:

1. /src
    a. Holds all of our pages and tests

2. /src/assets
    a. Stores all of our images
3. /src/components
    a. Has all the subcomponents we use for our pages, including cards, model tiles, and the navbar

Testing

Unit tests of the JavaScript code are done using Jest, in a file named “App.test.js”. The file has eleven different tests, which each attempt to render a react component and determine if what is rendered matches what is expected by matching text in the document to an expected string. The tests ensure the rendering of the home page, navbar, about page, and model and instance pages given valid data. The tests can be executed by running “npm test”.

Acceptance tests are done through Selenium, originating in a file, “acceptance_tests.py”. This file uses a chrome driver to simulate our page, and tests are run to determine if the page has the elements that we are expecting. Currently, acceptance_tests.py tests navigating through different model pages from the navigation bar and the pagination of all the models. The tests can be run by the command “python3 acceptance_tests.py”.

All tests are incorporated into the test stage in the configuration YAML file that runs our pipeline in GitLab, ensuring continuous integration.

Backend Architecture:

How it’s running:

The backend server is running on an EC2 instance listening on port 3003. AWS has a load balancer that redirects traffic to a target group containing one target, which is port 3003 on the above-mentioned EC2 instance.

Structure:

The Flask app itself can be found in /backend/server.py. Upon activating a virtual environment, we can install the Flask app as a package via ‘pip install’.

The two directories /backend/data and /backend/scrapers are scripts used in development to scrape third-party API’s for data. They should not be necessary to the continued operation of the project.

The structure of the database can be changed via add_to_tables.py.

Testing:

Unit tests of the RESTful API were exported from Postman into the file “ATX Assist API.postman_collection.json”. It contains a test for each endpoint of our RESTful API by checking if the GET request was successful and returned the expected data.

Our backend unit tests (done in test_api.py) were made to test each API endpoint function we created in our server.py flask file. We wanted to ensure each request acted as intended and have something for our pipeline to check to make sure new commits do not introduce unwanted bugs.

Database Architecture:

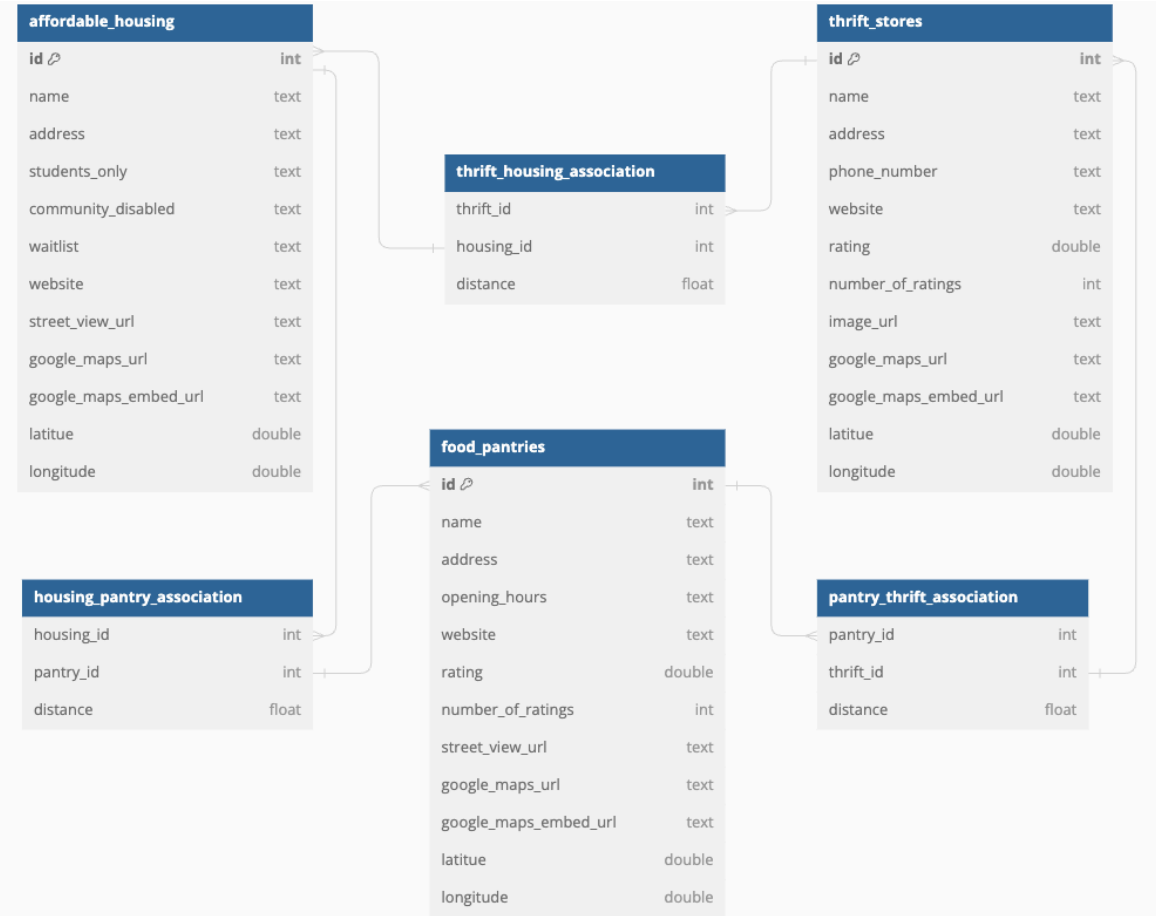
How it's running:

Our database is hosted on AWS RDS and is connected to an AWS EC2 instance. The database has an endpoint on port 3306, the default port used for MySQL.

Structure:

In order to properly connect and push the data, we utilized SQL Workbench and SQLAlchemy. In our MySQL database, we have six tables (one for each model, and one for each combination of models): food_pantries, affordable_housing, thrift_stores, pantry_thrift_association, housing_pantry_association, thrift_housing_association.

The following UML diagram showcases the organization of each table in the database:



Tools

In this phase, we leveraged the following tools for various aspects of our project:

AWS API Gateway

- Enabled us to construct a publicly accessible REST/HTTPS API and seamlessly route it under our custom domain name.

AWS RDS

- Gave us the ability to store data in a MySQL relational database

GitLab

- Functioned as our repository for storing files related to the full-stack website and backend code. Additionally, it provided features for project planning through issue trackers and milestones.

Flask

- Implements the end point logic.

MySQL Workbench

- Supported database management.

SQLAlchemy

- Employed as an ORM to create a many-many relationship with models.

React

- Allowed us to create an interactive UI for our website with ease.

React-Bootstrap

- Provided a framework and design templates for enhancing the UI of our website.

React Router

- Facilitated efficient routing within our website.

Node js

- Enabled the development of the backend server responsible for processing the logic of our main API, supporting concurrent requests efficiently and ensuring seamless data loading for our website.

AWS Elastic Cloud Compute (EC2)

- Utilized for hosting our Node.js server and other backend code.

AWS Lambda Functions

- Implemented to connect with our API in AWS API Gateway. These functions routed API requests to the corresponding Node.js server endpoint and efficiently returned the required data.

Postman

- Utilized for documenting and testing our RESTful API.

AWS Simple Storage Service (S3)

- Hosted our frontend website.

Docker

- Utilized for containerization, for streamlined development, deployment, and scalability of our application across different environments.

Zoom

- Employed for remote meetings to discuss various aspects of the project.

Slack

- Used as a communication platform for project-related discussions with the Teaching Assistants.

VS Code

- Served as an Integrated Development Environment (IDE) for debugging and version control using Git.

Ed Discussion

- Used to ask questions to peers and TAs.

Challenges

Throughout this phase, we encountered the following challenges:

Finding sufficient data from APIs:

- During the scraping period of this phase, there were times when the data we'd receive from an API was not sufficient for our requirements. To address this issue, we opted to broaden our specifications, avoiding excessive selectiveness.

CORS permissions:

- Web requests have certain special settings that must be set to allow the programmatic usage of API responses. This was fixed by adding a post-processing function for all responses in the Flask app itself. It adds certain properties to the response that allows for it to be used in other programs.
- Furthermore, we also added CORS support within the API on AWS API Gateway, and added specific headers in the response of the lambda functions invoked to ensure CORS permissions worked.

Character type of scraped data:

- We ran into issues while importing the scraped data from our sources into the tables through MySQL Workbench, as data from Yelp and various Google APIs were returning

non-ascii characters for certain values. To resolve this, we utilized regular expressions to find and replace any non-ascii values to cooperate with Workbench.

Unit tests:

- We struggled to configure Jest since we were using TypeScript for our frontend. For some reason, it couldn't resolve the TypeScript to JavaScript even after taking the recommended steps. We tried talking to TAs, looking through online forums, and reaching out to other classmates, but the only thing that worked was setting up the React project from scratch and storing the code as JavaScript files.