Technical Report: IDB Phase 1

Purpose/motivation

This website is created to provide resources to people in Harris County who have been displaced due to natural disasters. The site highlights both the resources that are available as well as the disasters that have occured to both provide assistance and bring awareness to the scale at which people are displaced.

Website Architecture

The frontend of this website is primarily programmed using HTML/CSS and Bootstrap. The Bootstrap stylesheet along with Bootstrap scripts that enable carousel functionality are imported at the top of each page script. Bootstrap allows us to create uniform and easy-to-implement carousels, card displays, and navigation.

The Navbar is also designed using Bootstrap and is imported at the top of each page. We currently manually link the static pages using absolute links, but plan on revising this behavior in Phase II to make additions easier.

API documentation

https://documenter.getpostman.com/view/29974721/2s9YJZ3jac

Models (and attributes)

- Shelters - city, type, beds, ages, on-site medical clinic
- Storms - name, start date, end date, type, FEMA code, and total FEMA aid
- Cities - name, population, homeless, disasters, shelters, description

Each model page contains a Bootstrap card display showing each of the model instances, separated out into different divs. Each card contains a relative link to the appropriate instance page. By phase 2, the model pages will be responsible for allowing the user to filter each instance by the attributes listed above.

Instances

There are currently three instances per model. For Shelters, there is the Women & Daily Development center, Salvation Army Greater Houston Area, and the Cornerstone Community center. For Storms, there is the October 2002 Houston Rainstorms and Tornadoes, Hurricane Ivan, and Hurricane Rita. Cities include Houston, Katy, and Cypress, Texas.

All of the data contained within the instance pages is programmatically obtained through a RESTful API.

APIs that were used per model:

- Shelters: https://fusion.yelp.com/
- Storms: https://www.fema.gov/about/reports-and-data/openfema
- Cities: https://www.mediawiki.org/wiki/API:Main_page, https://www.census.gov/data/developers/data-sets/popest-popproj.html

We struggled finding data for the ‘Storms’ model. Originally, we planned a model with Volunteer opportunities, but the API we would need to access ended up costing hundreds of dollars per month. We switched to a more restrictive model mid-stream, which required us to link-up different endpoints to produce useful information.

Toolchains

- Development: GitLab repository with CI/CD, Visual Studio Code
- Website architecture: currently runs in pure HTML/CSS with Bootstrap styling library statically imported
- Production hosting: Amazon AWS Amplify hosting
    - Amazon Route53

Hosting

The website repository is managed through GitLab. Amazon Web Services’ Amplify hosting uses the default build script, which points the hosting application to our static HTML scripts. The domain name was acquired through Namecheap, and the AWS Route53 is used to provide the DNS service. We re-route the name servers in Namecheap to AWS. AWS is integrated into GitLab’s CI pipeline so every push is verified on that server - there is no need to manually update or re-build the AWS files.

We struggled configuring AWS. Originally, we were going to use an ECS2 virtual machine to host the site, but we had issues integrating that properly with the GitLab repository. When we went with Amplify, we struggled getting the YML build file to execute the site properly. It took a while to get the website to build on Amplify, and we ultimately had to stop using Flask. In Phase II, we will switch to React and NPM which should streamline the build process.

User Stories

1. Rank shelter results by proximity

Not implemented. Given the timeline of when this suggestion was made and the scope of Phase 1, this is an unreasonable ask. For Phase 2, once we have a large number of shelters, the user’s proximity is certainly something that we should provide as a filter criteria when sorting the models as this information would be useful for someone seeking refuge.

2. “For the shelter and emergency relief it would be nice if clicking on the image of the pinpoint on map would take me to google maps so I can map it easily.”

Implemented. This is a great idea for interactive media to embed into our website. Instead of creating a custom map with coordinates, we instead provide a simple embed into Google Maps. In a future stage, if we were to store the coordinates for each of the shelters, this may make it easier to implement the priority ranking suggestion.

3. “I would like the app that has a function enable to add shetlers to the favorite list.”

Not implemented. This is beyond the scope of what we are planning this app to be. It would require some sort of user data management system as well as the creation of user accounts to save favorites. Although it is a good idea, we are afraid it would complicate the website a bit too much.

4. “I would like a way to remember which places I've volunteered at. That way I can continue to build connections with them and continue working towards the same cause.”

Not implemented. Like the other suggestion about having a ‘remembered’ list, this is a good idea but would require the creation of user accounts. This is too personalized for the type of website that we are creating. Moreover, since we had to get rid of the volunteer model, I don’t think this suggestion could be applicable anymore.

5. “As someone who would like opportunities to volunteer for the homeless, I'd like to see the locations of the volunteer opportunities displayed on the model cards so I can choose them easily.”

Not implemented. As mentioned earlier, we removed the volunteering model due to API limitations. We do, however, have a Shelters model that can show places that may potentially have volunteer opportunities, especially during a disaster.