Technical Report: Southwest Hurricane Aid

IDB Group 22

Introduction and Purpose

Hurricanes and tropical storms are a critical issue for many Texans living on the coast, and they will only become a greater issue in the future due to climate change. The goal of this site is to give resources to Texans who are in those areas, allowing them to easily do research on how hurricanes and tropical storms can affect them.

Tools Used

- Frontend:
    - React - main Typescript framework
        - React Router is used for routing
    - Material UI - main CSS framework. We use many Material UI components in this project, including Box, Link, and Card.
    - Namecheap - domain registration
    - npm - package manager
- Backend
    - AWS for hosting.

Models and Attributes

Historic Hurricane data

- Hurricane Name
- Category
- Date
- Wind speeds
- Fatalities
- Hurricane Photo

Texas Counties

- County Name
- Population
- Land Area
- Region
- Avg Mean Precipitation

- County Map
- Historic Hurricane Hits (number/names)

Aid Organizations

- Facility Name
- Address
- Organization Name
- Phone
- Facility Map

Application Architecture

- Public
    - aidpictures, county-images, hurricane_images - directories for the media for the instances. This should be deleted by the end of the next phase.
    - Any locally stored media (e.g. the about page pictures) goes in the public directory.
- src
    - About - directory for the component(s) of the About page
    - Aid Organizations - directory for the component(s) of the Aid Organizations model page
    - AidOrganizationInstances - directory for the component(s) of an Aid Organization instance page
    - Counties - directory for the component(s) of the Counties model page
    - CountyInstances - directory for the component(s) of a County instance page
    - Data - directory for any .json files related to the models.
    - Home - directory for the component(s) for the home page.
    - HurricaneInstances - directory for the component(s) of a Hurricane instance page.
    - Hurricanes - directory for the component(s) of the Hurricanes model page.
    - Any frontend files not specified (e.g. App.tsx, index.tsx) go in the src directory. Navbar.tsx, which is the component representing the top navigation bar, also goes in src.
    -

APIs and Integration

- Gitlab API https://docs.gitlab.com/ee/api/rest/
    - Used for collecting data for the About page
- Aid Organizations API: https://hifld-geoplatform.opendata.arcgis.com/datasets/geoplatform::national-shelter-system-facilities/about

- Wikipedia API (used for both counties and hurricanes): https://en.wikipedia.org/api/rest_v1/

Deployment

The domain was purchased on Namecheap, and the DNS services were transferred to Route 53, so the Nameservers on Namecheap were updated to use Amazon's Route 53 nameservers. The website is built and deployed to an S3 bucket with Gitlab CI every time something is commited/merged to the main branch using the AWS CLI, which I provided an IAM key and secret key to use and set environment variables for the CI pipeline in the Gitlab configuration settings. CloudFront was used to allow HTTPS by getting an SSL certificate and using CloudFront as a CDN.

Challenges Faced

- Creating the routing aspect
- Creating an issue board
- Accessing the issue board of the team we were a customer of
- Creating a branch per issue
- Resolving merge conflicts with various versions