Tracking the Impact of Food Banks Across New Hampshire

University of New Hampshire

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Introduction

Working at a food bank requires volunteers to be able to document a lot of information in a fast-paced environment while trying to quickly help those in need. Our web app aims to help volunteers efficiently document information about each donation pick up, such as where it is going and who it is going to, while also storing and formatting this data in a way that makes it easy to analyze.

This information allows the NH Food Bank to easily keep track of all the donation pickups being made and what town those vehicles are traveling back to. This information is crucial for determining the best locations to set up new mobile food banks to help the greatest number of people possible.

Requirements

Functional Requirements:
- Allow volunteers to enter data such as town, number of people, zip code, etc. into the database.
- Allow administrators to view and alter the data in the database
- Calculate and display the distance between a vehicle's starting town and the central foodbank

Non-Functional Requirements:
- Handle a scalable number of users and transactions as database grows
- The user should be able to navigate to and from any page in less than 5 clicks

Security Requirements:
- Only administrators can login and view the data
- Only administrators can make updates/deletions to the database

Implementation

- HTML, CSS, and PHP for front end development.
- SQL, and more PHP, for backend development and database storage
- JavaScript is used exclusively to work with the google maps API
- Everything is stored and functioning on an Ubuntu VM within the CS departments Cloud server, Which is live and can be found here:
  http://food-data-nh.cs.unh.edu
  (Must be on UNH Wi-Fi or use a UNH VPN)

Design

Upon opening the web application, the user is first prompted for their name. After entering their name, they are directed to the homepage. Clicking on the 'Add New Record' button takes them to another page where they can enter information such as the town traveled from, zip code, and weather. The admin login on our homepage is exclusively for administrators, granting them access to view the data. The 'change volunteer' button enables them to change to the name of different volunteer.

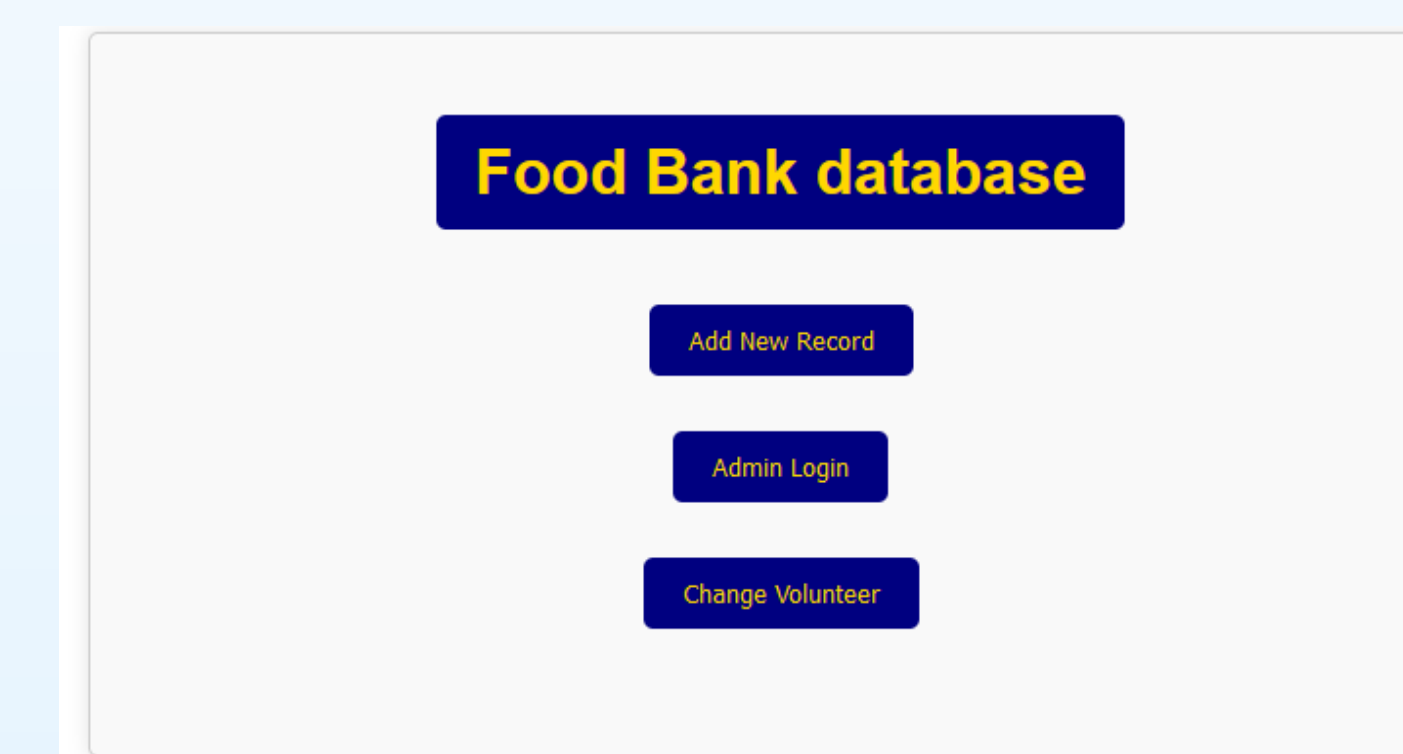Figure 1: Volunteer Page
(appears when app is accessed)

Figure 2: Homepage

Admins can view all the information in the database. This includes the ID, the town traveled from, ZIP code, number of people, town of the food bank, date, weather, and volunteer name. Admins can also sort this data by clicking on buttons like "View Total People per Town," "View Total People per ZIP Code," and "View Total People by Weather," as well as search by town, zip code or weather and sort the records by Start/End date. The "Export All Records" button allows users to export the data into an Excel file. The "Map" button provides geographical coordinates of where donations are going to.

All the database information is stored in two tables, one with all the data about donation pickups, and one with the account information.

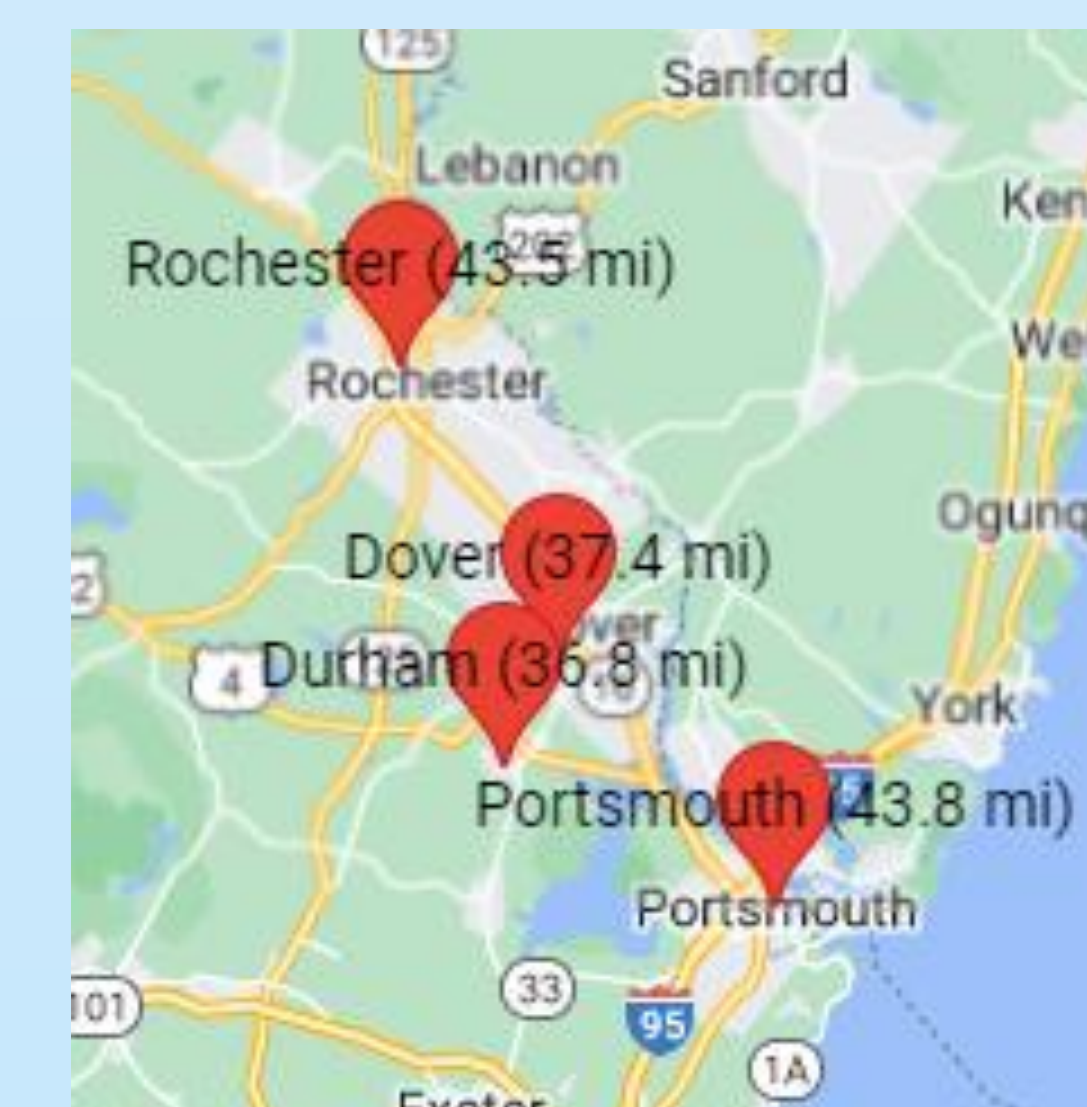Figure 3: Viewing the records as an admin.

Figure 4: Map

Testing

Our testing was done using PHPUnit. To test the interactions between the web-app and the database, we created mock pdo objects which acted as a temporary database. Using our PHP functions, we can alter the mocked pdo objects instead of our real database. Using assertions, we check that the data in the pdo object has been altered properly to reflect the changes that the test is trying to make. This allowed us to easily and quickly test the interaction between the frontend and backend of our code and ensure that all our CRUD operations function properly.

For user testing, we provided our sponsor with the link to the web application, as well as testing it ourselves to ensure that the functionality of each part works. The next step of our user testing includes giving students at the Center for Business Analytics access to the application and asking them to insert data and view / sort the information in the database. Then, we will ask them to rate the following on a scale of 1-5: ease of use, intuitiveness, time taken to perform desired actions.

Results / Evaluation

We have provided value related to our MOV by allowing for volunteers to quickly enter information into the database about each donation in less than 30 seconds, as well as allowing admins to view and sort the data easily and intuitively in less than 5 clicks.

Volunteers can easily keep track of all the necessary information quickly without having to return to the home page after each entry. This allows for them to maintain a fast-paced environment without losing information.

Admins can view and sort the data in numerous ways, as well as manipulate the data. They can also export the data to Excel, allowing them to easily analyze the data as well as make any necessary changes to the information in the database.

Acknowledgements