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OSU CS 406: Projects
Final Project Report
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Introduction

My project E-Vote is a website for any American citizens to register and vote from anywhere in the world as long as they have internet connection. It will allow them to stay safe due to the pandemic, decrease waiting times at the polls, and improved transparency for results. Voters and Candidates will be able to login, see any elections and their results, vote for elections in their district, and register to run. The project is still a work in progress and took a lot longer than I expected due to its size and scope, but there has been many great strides to set up the front and back-end.

Tools

This is the list of the tools used so far to work on my project from designing to developing.

1. Sublime Text
2. Xampp for PhpMyAdmin/MySql
3. GitHub
4. Chrome
5. Handlebars
6. Bootstrap
7. Font Awesome – Icons to be used to provide visual representation
8. Powerpoint – web design prototype
9. Diagrams – Lucid Chart and Paper
10. US Cities Database data dump (modified for attributes' naming consistency):
<https://github.com/kelvins/US-Cities-Database>

Systems Used

Xampp for PhpMyAdmin/MySQL

Xampp is a open-source software that allows me to use the database locally through PhpMyAdmin and MySQL locally on my Linux and Windows. I will use JavaScript and NodeJS to connect the database to the front end to make the pages dynamic. When the user casts a ballot, the information will be saved in the database. The user will also be able to see the results by pulling information from the database.

<https://www.apachefriends.org/about.html>

Form Required Fields

Some fields in the forms are required to be completed when registering. It is coded in the html files, which will be converted to handlebars, as “required.” If the user does not fill out the field and clicks “submit”, a notification will popup identifying that the field that the user must fill.

```
<div class="col">
  <label for="v_lName"> Last Name </label>
  <input type="text" class="form-control" name="v_lName" id="v_lName" placeholder="Last Name" required>
</div>
```

Form Number Validations

Some fields in the forms are integers, such as cellphone and Social Security Numbers. It is coded in the html files, which will be converted to handlebars, so that the program will only accept certain length and integers. Pattern ensure that the length is appropriate and type will make sure that it is integers.

```
<div class="col">
  <label for="ssn"> SSN </label>
  <input type="number" class="form-control" maxLength="3" pattern="[0-9][0-9][0-9][0-9][0-9][0-9][0-9][0-9]" placeholder="000000000" name="ssn" id="ssn" required>
</div>
```

Usage Instructions

The front-end is still static. You may download the files to your PC and open it as a html page. It is designed so that when all web pages are completed, I would then change the files to handlebars so that they can be dynamic with JavaScript and NodeJs. The screenshot below is an example of a static page.

✓ Registration: Voters

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Registration

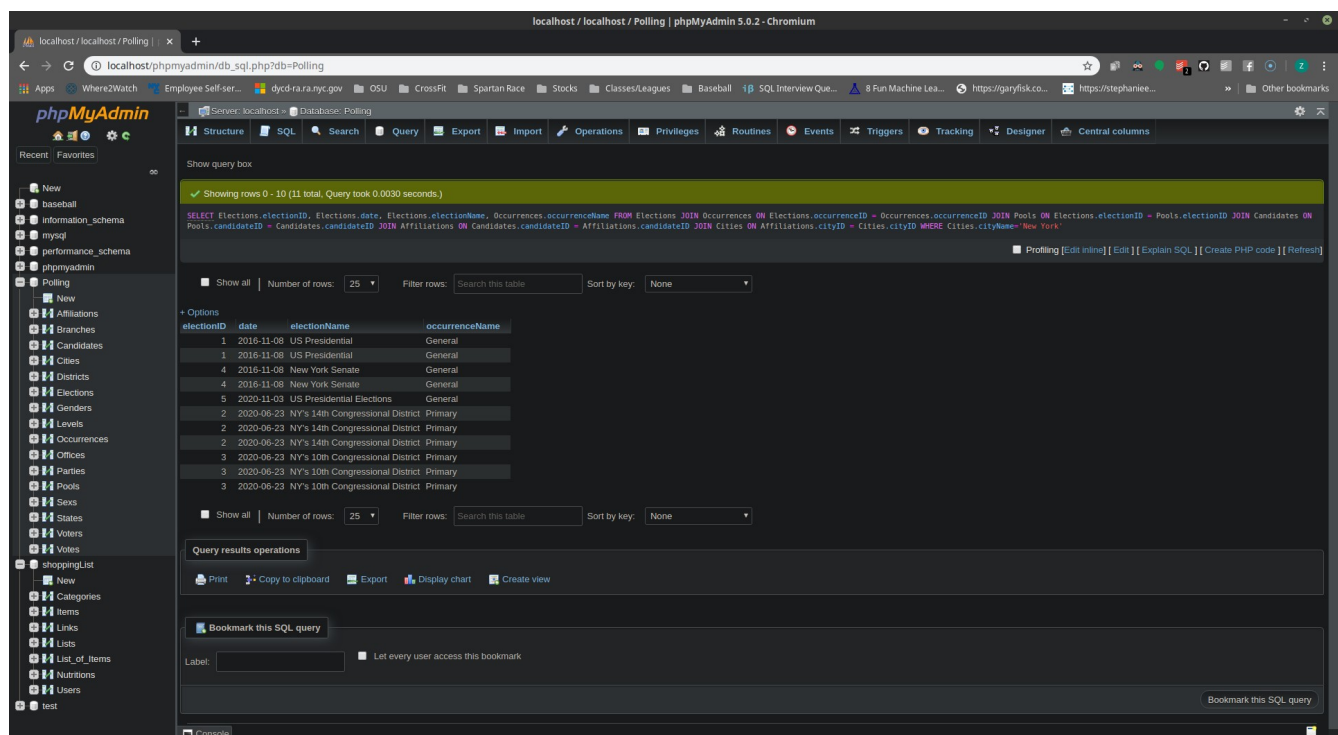
First Name	Last Name	SSN	Birthdate	Address	Apt Number
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
City	Select State		Zipcode		
<input type="text"/>			<input type="text"/>		
Phone Number	Cell Number		Email Address		
<input type="text"/>	<input type="text"/>		<input type="text"/>		
Select Party	Select Gender		Select Sex		
<input type="text"/>	<input type="text"/>		<input type="text"/>		
Username	Password				
<input type="text"/>	<input type="text"/>				
<input type="button" value="Register"/>					

However, the database can be interacted. Upload the DDL file into your database and implement the SQL queries from the DML file. In the queries where that has “:input”, please replace that block with a value. For example, for the query in the screenshot below, replace “:input_cityName” with a city.

```
-- Search By Location: CITY ONLY

SELECT Elections.electionID, Elections.date, Elections.electionName, Occurrences.occurrenceName
FROM Elections
    JOIN Occurrences ON Elections.occurrenceID = Occurrences.occurrenceID
    JOIN Pools ON Elections.electionID = Pools.electionID
    JOIN Candidates ON Pools.candidateID = Candidates.candidateID
    JOIN Affiliations ON Candidates.candidateID = Affiliations.candidateID
    JOIN Cities ON Affiliations.cityID = Cities.cityID
WHERE Cities.cityName=:input_cityName;
```

In the example below, I replaced it with “New York” and you will see that results are displayed.



UX Description

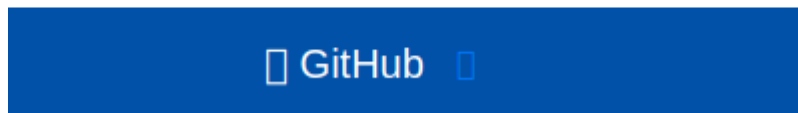
Since the project is still a work in progress and the front-end pages are still static, the users are not able to interact. However, from the design of the website, it is intended to be simple and friendly. The forms are lengthy to register to vote but the purpose of it is to capture all relevant data so that a third party can request for data for research or analysis purposes.

The form for the voter to register as a candidate is also lengthy but it is identical to the voter registration. The voter's information will be rendered into the form. The voter can choose to update before submitting the form to register as a candidate.

The user should also be able to look up for elections by location, candidate, and election. The page should return all elections based on the fields criteria. Then the user will have the option to click on that election for specific information about the results such as who won and how many votes.

The login page will allow the user to click to login or register.

Again, all of these pages are static. The only two links are functional are at the bottom of the home and main pages. I still have not yet worked on why the icons are not appearing like how it worked at the top navigation bar. Regardless, if one clicks on the left link, it will take you to the project's GitHub page to see all the code and documents used. The right link will take you to my LinkedIn profile. Below is the cropped screenshot of a spot I am specifically referring to.



Project Continuance

The project has made some strides but still has many more to go. These are the next steps:

1. Finish creating the static html pages for the following pages:
 - a) Upcoming elections (voter perspective)
 - b) add elections (admin perspective)
 - c) account information
 - d) past voted elections (voter perspective)
 - e) past voted elections results – very similar to election results but it would need an additional navigation bar right under the top bar for the user who is now logged in
2. Finish SQL queries in the DDL file. Implement GROUP by candidates to tally votes and figure out how to display percentage
3. Start writing SQL functions (prototypes) so that various js files could call to them as needed
4. Write js files and convert html pages to handlebars and render the information from the database to the front end
5. Implement Hash/Passport for system username/password validations
6. Update the database and its diagrams so that...
 - a) voters and candidates are combined to one table called "Users" with a new attribute to identify that the user is a candidate and another for if the user is an admin
 - b) add userName and password to the Users tables
 - c) Update SQL Queries as appropriate

Conclusion

There is still a lot more work to do to make the website functional and dynamic. The back-end is set up. The front-end is more than half finished, and most of the upcoming work is with the JavaScript and NodeJS while making modifications to existing items. As long as I keep the

front-end simple and stay organized, the project can be reasonably completed. All of this to show that a large database with an interactive and simple front end can be achieved to promote election transparency, increase voter turnout and participation, and keep everyone safe and healthy.