

State Finder

State Finder Team: Alyiah Proctor, Emily Crabtree, Anne Nguyen, Darlyn Mendez

1. Project Definition - Alyiah (Why and what) and Annie (how)

Career transitions, job searching, and location searching are stressful activities that one usually encounters at some stage in their lives. Our State Finder Web Application is meant to aid people in these processes by creating a tool that will provide users with information that can help their decisions. The tool will mainly be targeted to those who are looking to move to another state, college students who want to see the locations that their future career could lead them to, people who are looking for a career change, or anyone that is curious about where an occupation could allow them to live in the United States. Our State Finder Web Application attempts to increase the confidence in the career choices and location choices one may make.

The goal of the project is to create a web application that users can rely on to find the best locations for them and their families to reside in based on their potential career income. Users should be able to input a number of career choices and family info, and the site will populate with the metro areas they can afford, as well as info on each state and further infographics regarding state costs. The team hopes to create a Web Application that is reliable, accurate, easy to use, and a great resource for our users.

The general structure of our application will be a Python - Flask framework and Heroku to aid in the development process. Possible Python libraries that we will use include GeoPandas, Matplotlib, and Flask login. The frontend will be made with HTML, CSS, JavaScript, and Bootstrap. Additionally, the data will be stored in a SQL server database that is hosted in Azure under a student subscription.

Our goals for the State Finder Web Application will be achieved through continuous team member collaboration on a Discord server, bi-weekly Scrum meetings, web app implementation, continuous research, troubleshooting, and great teamwork.

2. Project Requirements – Group responsibility - Emily presenting

The functional requirements for our project is the production of a heat map to indicate livable areas based on user input. The map should change colors indicating the livability of a specific area, according to a provided color key. Furthermore, users will be able to access state details, such as state population and average salary for the user's indicated occupation and job level. The way in which this will function is still undecided, but will either be available when the user hovers their cursor over a specific area or will automatically generate as text beneath the produced heat map.

When the web application loads, it will load to the homepage. On the top of the page, there will be the website title, a button that redirects the user to an "About Us" page, a button that redirects the user to a "Contact Us" page, and a button that redirects the user to a "Resources" page. In the center of the homepage will be a brief description of the web application and a button that says "Find A State", which will redirect the user to a webpage where they enter their information.

On this page, the user will be able to indicate their occupation, job level (entry level, intermediate, or senior), whether they are married, whether their spouse is employed, and how many kids they have (up to 3), all in various drop down menus. All of the dropdown menus must have a selected option in order for the heat map to generate. Then, the user will click a button to submit their options and will be automatically redirected to the heat map and area details. By utilizing dropdown menus and requiring that all menus have a selection, the possibility of user input error is greatly reduced and the usability of the web application is increased.

System hardware that is required in order for the user to use our web application is a CPU, a monitor or screen to display the web application's interface, a keyboard, and a mouse. System software that is required for use of the web application is an operating system on their device, a graphics card, and a web browser. The database requirements for the web application is a connection to our SQL database. The SQL database is where all the livable wage data per area is stored, as well as the available occupations and their respective salaries. The user will not require connection to this database and nothing will be stored on their local device, but they will require an internet connection so a connection to the database can be made on the web application's backend.

Security requirements for our web application is a secure login portal that will require the user to provide a unique username and password. Each user will be given a unique ID and their login credentials, as well as their personal information required for the State Finder, will be stored in our database. The database will be secure and users will not have access to information on other users, nor will they be able to directly access the salary or livable wage data.

3. Project Specification – Group responsibility - Darlyn Presenting

The statefinder has a major focus area in data analysis. The project involves manipulating and making sense of data as well as justifying those choices and drawing insightful conclusions. Our goal with the app is to consolidate data from metro areas and create a helpful one stop shop for living decisions. There is also a specification in database management and front end user design. All data used in the app will be housed in a backend server, and our UI will need to be flexible and usable to communicate with this server.

For the development of the web app the flask framework will be used to create the web aspect of the app and Azure SQL server will be the database framework for the backend. We will make changes to the Azure SQL server database in Azure Data Studio. We have all been added as collaborators to the database, so that the configuration file will work for the team for the database connection. As Python is our primary development language, the pandas, plotly, and matplotlib libraries will be used to simplify the tasks. HTML and CSS will be the primary languages used for the UI development and works hand in hand with flask. The Bootstrap front-end framework will be used to make the UI visually appealing. Any IDE is acceptable to use as long as it supports the python language. However, Visual Studio Code is the IDE used by

most of the development team. We will have a Google Cloud Console Setup in order to get an API key, so that we can access the Google Maps API. We will also have a Firebase Console Setup in order to have a Firebase Realtime database to store our users login and personal information.

The project does not have a specific device specification. It will be built to run on most devices that can access the web through a web browser. Desktops,laptops,tablets,phones,etc.

Overall the statefinder belongs in a genre of everyday web applications or sites that require very little demands from the user.

Focus / Domain / Area

- Skillset focus, ie machine learning, data science etc.
- Types of skill sets needed and responsibilities for team members.
- Alyiah - Heat/choropleth map.
 - Extra data infographics
- Darlyn - Database Configuration,Table configuration with list of livable areas in descending order based on leftover disposable income
 - Group troubleshooting
 - Extra data infographics
- Emily - User Interface Design and Implementation
- Annie - Metro area descriptions and state info pages

Libraries / Frameworks / Development Environment

Frameworks

- Flask python
- Azure Sql Server
- Bootstrap - front-end development framework

Libraries

- Pandas for data manipulation
- Plotly for graphs
- Matplotlib for graphs

Development Environment

- Visual Studio Code
- Azure Data Studio
- Google Cloud Console Setup
- Firebase Console Setup
- Configuration Files for connections and deployment

Platform (Mobile, Desktop, Gaming, Etc)

- Mobile & Desktop

Genre (Game, Application, etc)

- Web Application for everyday use