

# Desk Aid Website

By Victoria Shelton and Tim Hunt

## 1. Introduction

The project proposed by Cameron Hardy is an interactive web application. Its purpose is to be a guide for district office staff when a constituent approaches requiring help with any number of issues. Essentially, it will be an interactive online desk aid adapted from an existing printed guide that uses problem-solving flowcharts. The website will give staff options based on these flowcharts, and staff will select the option that best describes the constituent's issue. Once the end is reached, the website will return a solution in the form of a description, link, or contact information of a relevant department.

The client, Cameron Hardy, would like this project done to increase efficiency in assisting constituents and educating office staff on common issues these constituents may have. He was originally planning to implement the printed guide as an interactive/clickable PDF, but was considering the option to use a web version for greater ease of use. Additionally, implementing this data in the form of a website would allow for opportunities to make it easily modifiable, so that entries can be added and removed as time passes. This project would align well with those goals and simplify the guide.

## 2. Requirements

### User Stories

The website's requirements were gathered directly from meetings with the client. These requirements were then formatted as user stories, shown in the table below. Three technical tasks were added in order to set aside time for building the website's framework: the backend, the database, and the user interface. Some additional user stories were suggested by the professor to make this project an appropriate difficulty level for the course.

| ID           | Story Title           | Points | I want [functionality]        | So that [value]               |
|--------------|-----------------------|--------|-------------------------------|-------------------------------|
| User Stories |                       |        |                               |                               |
| S1           | View guide categories | 2      | to view categories            | I can find the guide I need   |
| S2           | Search for guides     | 3      | to search for specific guides | I can find a specific guide   |
| S3           | Use guide             | 3      | to navigate through the guide | I can reach the answer to the |

|                        |                           |    |  |  |
|------------------------|---------------------------|----|--|--|
|                        |                           |    |  | constituent's question                       |
| S4                     | View resources            | 2  | to view resources                                | I can find info quickly                      |
| S5                     | Add resource              | 1  | to add additional resources                      | I can add additional resources               |
| S6                     | Edit resource             | 3  | to edit resources                                | I can edit resources                         |
| S7                     | Delete resource           | 2  | to delete resources                              | I can delete resources                       |
| S8                     | Create guide info         | 2  | to begin making a guide                          | I can add another guide                      |
| S9                     | View guide as flowchart   | 13 | to view the guide as a flowchart (or a tree)     | I can visualize and click on steps           |
| S10                    | Export guide as flowchart | 5  | to export the guide as a flowchart (or a tree)   | I can export the guide as an image           |
| S11                    | Delete guide              | 1  | to delete a guide                                | I can remove it from the database            |
| S12                    | Assign category to guide  | 3  | to categorize my guide                           | It is easier to find                         |
| S13                    | Create category           | 2  | to create a category for my guide                | It can be more customized                    |
| S14                    | Delete category           | 3  | to delete a category                             | It can have categories removed               |
| S15                    | Add guide step            | 5  | to add a step to my guide                        | I can add steps to my guide                  |
| S16                    | Edit guide step           | 3  | edit a step of the guide                         | I can update my guide                        |
| S17                    | Delete end step           | 1  | to remove parts of my guide                      | I can remove parts of my guides              |
| S18                    | Delete Intermediary Step  | 3  | to delete Intermediary Steps                     | I can safely remove Intermediary Steps       |
| S19                    | Accounts                  | 2  | to have accounts for access to certain functions | I can create accounts with customized access |
| S20                    | History                   | 2  | to see who makes editations                      | I can trace who edits what                   |
| S21                    | Backup                    | 1  | to save data in case of accidental deletion      | I will not lose important data               |
| <b>Technical Tasks</b> |                           |    |  |  |
| T1                     | Setup the backend         | 5  | a functioning website                            | I have a useful application                  |

|              |                    |    |                           |                               |
|--------------|--------------------|----|---------------------------|-------------------------------|
| T2           | Setup the Database | 2  | a functioning database    | I have a useful database      |
| T3           | Setup the UI       | 3  | to access the application | I can utilize the application |
| Total points |                    | 72 |                           |                               |

## Non-Functional Requirements

The client specified a few non-functional requirements. The website should be easy to use and navigate and should contain relevant logos and branding provided by the PA House of Representatives. If possible, the website should interface with existing web pages hosted on SharePoint, through links or otherwise.

## Planning

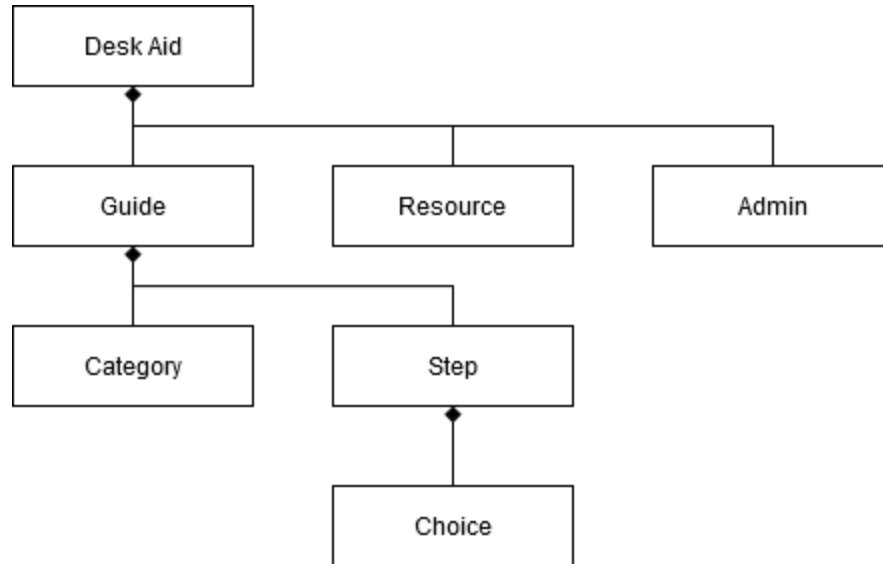
The project will take place over 5 iterations, or sprints, during the course of the spring semester. Below is a table detailing the planned schedule of story completion. This is liable to change depending on whether or not the difficulty of each story was estimated correctly.

| Iteration | End Date  | Stories                  | Total Story Points |
|-----------|-----------|--------------------------|--------------------|
| 1         | 2/12/2025 | T1, T2, T3               | 10                 |
| 2         | 2/26/2025 | S1,S2,S3,S4,S8           | 12                 |
| 3         | 3/19/2025 | S11,S12,S13,S14,S15,S16  | 18                 |
| 4         | 4/2/2025  | S5,S6,S7,S18,S19,S20,S21 | 14                 |
| 5         | 4/16/2025 | S9,S10                   | 18                 |

## 3. Design

### Architecture

Our project will be using layered architecture and will be organized as a full-stack web application. Its layers will include a front-end, a back-end/server, and a database. A simple class diagram can be seen below.

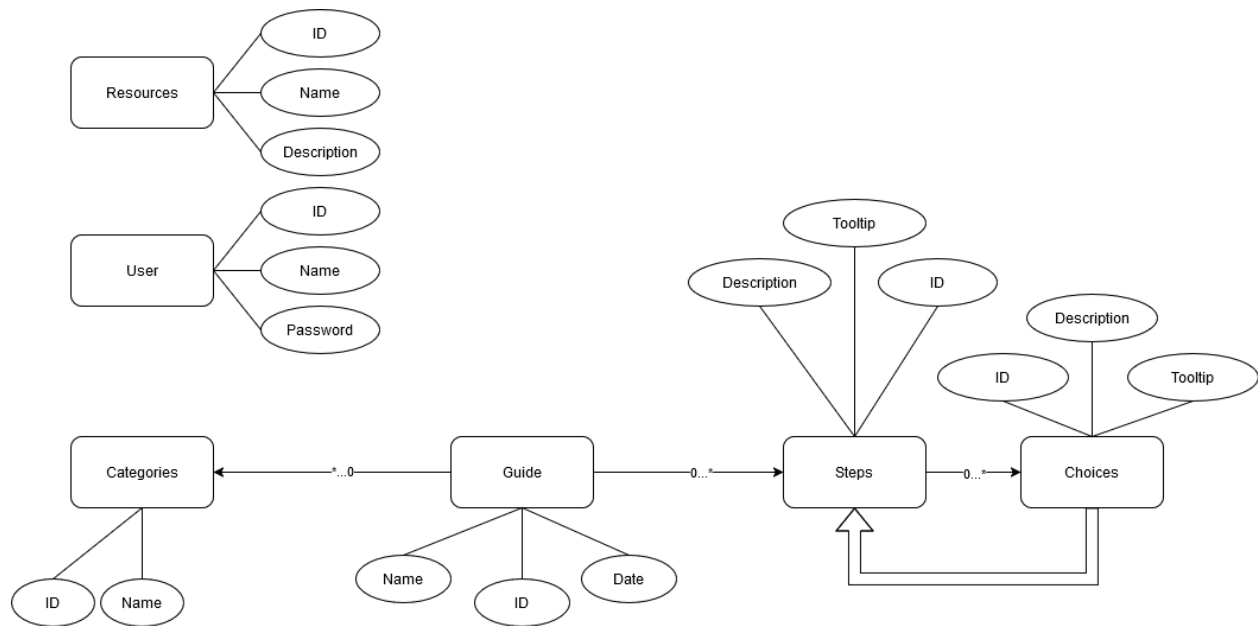


## Technology

The main programming language for this project will be Javascript because of its flexibility and tools for creating web apps. This project will benefit from additional technology for the front-end, back-end, and database. To construct the front-end, we will use Next.js, React.js, and Tailwind CSS. React is a javascript framework that will aid in creating the dynamic, user-friendly interface. For the server/back-end, we will use Node.js and Express.js. Express.js is a web framework for Node.js that will make connecting the front and back end easier. For the database, we will use SQLite.

## Database

The database will be created using SQLite. Below is a diagram that displays the structure of the entries in the database.



## UI

The client specified that the website should be easy to use and navigate. Additionally, it should contain relevant logos and branding provided by the PA House of Representatives. To implement these requests, we designed the UI to have a similar color scheme and layout as existing PA House of Representatives websites. The UI does not contain an overwhelming amount of information, and all options are easy to locate from the home page. Extra effort was taken to make sure the user can find the guide they need and reach the answer of the constituent's query as fast as possible. Mocks of the web pages can be seen below.



# 4. Iterations

## Sprint 1

### Stories Attempted

| ID | Story Title        | Points | Sprint Done | Total Points per Sprint |
|----|--------------------|--------|-------------|-------------------------|
| T1 | Setup the backend  | 5      | 1           |                         |
| T2 | Setup the Database | 2      | 1           | Total Points            |
| T3 | Setup the UI       | 3      | 1           | 10                      |

| Member   | Stories | Hours Worked | Total Points |
|----------|---------|--------------|--------------|
| Victoria | T1 T3   | 12           | 8            |
| Tim      | T2      | 6            | 2            |

## Testing

```

PASS  ./test.js
  Home page
    ✓ Renders (21 ms)
    ✓ Displays title (8 ms)
    ✓ Renders search bar (2 ms)
    ✓ Calls search function (32 ms)

  › 2 snapshots obsolete.
    • Home page renders correctly 1
    • renders correctly 1

-----|-----|-----|-----|-----|-----
File    | % Stmts | % Branch | % Funcs | % Lines | Uncovered Line #s
-----|-----|-----|-----|-----|-----
All files |    100   |    100   |    100   |    100   |
page.js  |    100   |    100   |    100   |    100   |
-----|-----|-----|-----|-----|-----

```

For the testing framework, we used Jest. Since we did not have too much code to test at the beginning of the project, we only wrote tests for the home page's components. The coverage report can be found at [desk\\_aid\coverage\cov-report\index.html](#), as well as the image above.

## Retrospective

This sprint was a bit difficult as the website setup did not completely cooperate. Building the UI with next.js and tailwind was reasonably painless, but integrating the database into the UI proved to be difficult. More work will have to be done next sprint on integrating the database into the UI.

## Next Iteration Planning

For the next iteration, we will aim to complete the stories S1, S2, S3, S4, and S8. These stories will integrate the database into the UI and flesh out the website. Additionally, we will work on meeting more often and working as a team.

## Sprint 2

### Stories Attempted

| ID  | Story Title           | Points | Sprint Done | Total Points per Sprint |
|-----|-----------------------|--------|-------------|-------------------------|
| S1  | View guide categories | 2      | 2           |                         |
| S2  | Search for guides     | 3      | 2           |                         |
| S4  | View resources        | 2      | 2           |                         |
| S8  | Create guide info     | 2      | 2           |                         |
| S11 | Delete guide          | 1      | 2           |                         |
| S14 | Delete category       | 3      | 2           | Total Points            |
| S19 | Accounts              | 2      | 2           | 15                      |

| Member   | Stories          | Hours Worked | Total Points |
|----------|------------------|--------------|--------------|
| Victoria | S1, S4, S14, S19 | 15           | 9            |
| Tim      | S2, S8, S11      | 12           | 6            |

## Testing

For our testing we utilized Jest to help effectively test our front end. The generated coverage report is shown below, and can be accessed at [desk\\_aid\coverage\index.html](#).

### All files

94.44% Statements 187/198 88.88% Branches 36/38 100% Functions 18/18 94.44% Lines 187/198

Press *n* or *j* to go to the next uncovered block, *b*, *p* or *k* for the previous block.

Filter:

| File                 | Statements                          | Branches                          | Functions                       | Lines                               |
|----------------------|-------------------------------------|-----------------------------------|---------------------------------|-------------------------------------|
| pages                | <div><div></div></div> 96.29% 52/54 | <div><div></div></div> 100% 5/5   | <div><div></div></div> 100% 3/3 | <div><div></div></div> 96.29% 52/54 |
| pages/EditSelectPage | <div><div></div></div> 100% 29/29   | <div><div></div></div> 100% 1/1   | <div><div></div></div> 100% 1/1 | <div><div></div></div> 100% 29/29   |
| pages/HelpPage       | <div><div></div></div> 100% 16/16   | <div><div></div></div> 100% 1/1   | <div><div></div></div> 100% 1/1 | <div><div></div></div> 100% 16/16   |
| pages/ResourcesPage  | <div><div></div></div> 88.23% 30/34 | <div><div></div></div> 80% 4/5    | <div><div></div></div> 100% 1/1 | <div><div></div></div> 88.23% 30/34 |
| pages/SignInPage     | <div><div></div></div> 92.3% 60/65  | <div><div></div></div> 83.33% 5/6 | <div><div></div></div> 100% 4/4 | <div><div></div></div> 92.3% 60/65  |

## Retrospective

Looking back at this sprint and the way we planned out our stories, we realized that some of them depended on having other stories done, forcing us to reconsider how we needed



to reorganize our future sprints alongside this. Alongside this we had also run into issues in combining the front and backend with react due to neither of us having much experience with databases. Part of this issue as stated earlier with our stories tackled for this sprint has to do with how many points we decided to tackle as opposed to what we had originally planned. We ended up with 15 points worth of stories where we had only originally intended 12 points total.

## Next Iteration Planning

For our next iteration we plan to tackle several key user stories surrounding the UI and generally syncing up the frontend and backend, with a more test heavy focus for what we are going to emphasize after the interface with react and HTML pseudo code is reorganized. Primarily we intend to focus on S3, S12, S13, S15, and S16 for our stories while optimizing the code we already have, while tackling the estimated 16 story points.

## Sprint 3

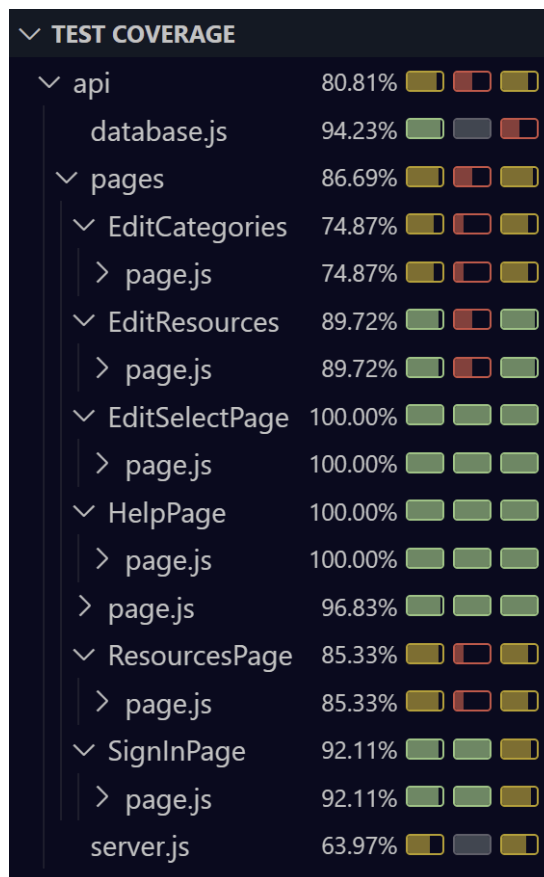
### Stories Attempted

| ID  | Story Title              | Points | Sprint Done | Total Points per Sprint |
|-----|--------------------------|--------|-------------|-------------------------|
| S5  | Add resource             | 1      | 3           |                         |
| S6  | Edit resource            | 3      | 3           |                         |
| S7  | Delete resource          | 2      | 3           |                         |
| S11 | Delete guide             | 1      | 3           |                         |
| S12 | Assign category to guide | 3      | 3           | Total Points            |
| S13 | Create category          | 2      | 3           | 12                      |

| Member   | Stories              | Hours Worked | Total Points |
|----------|----------------------|--------------|--------------|
| Victoria | S13, S5, S6, S7, S12 | 30           | 11           |
| Tim      | S11                  | 12           | 1            |

## Testing

|                          |                        |        |         |        |       |        |      |        |         |
|--------------------------|------------------------|--------|---------|--------|-------|--------|------|--------|---------|
| api                      | <div><div></div></div> | 68.94% | 202/293 | 67.74% | 21/31 | 100%   | 0/0  | 68.94% | 202/293 |
| api/pages                | <div><div></div></div> | 96.36% | 53/55   | 100%   | 5/5   | 100%   | 3/3  | 96.36% | 53/55   |
| api/pages/EditCategories | <div><div></div></div> | 78.44% | 131/167 | 75%    | 6/8   | 25%    | 3/12 | 78.44% | 131/167 |
| api/pages/EditResources  | <div><div></div></div> | 91.66% | 165/180 | 95.23% | 20/21 | 53.84% | 7/13 | 91.66% | 165/180 |
| api/pages/EditSelectPage | <div><div></div></div> | 100%   | 26/26   | 100%   | 1/1   | 100%   | 1/1  | 100%   | 26/26   |
| api/pages/HelpPage       | <div><div></div></div> | 100%   | 16/16   | 100%   | 1/1   | 100%   | 1/1  | 100%   | 16/16   |
| api/pages/ResourcesPage  | <div><div></div></div> | 89.39% | 59/66   | 80%    | 4/5   | 25%    | 1/4  | 89.39% | 59/66   |
| api/pages/SignInPage     | <div><div></div></div> | 92.42% | 61/66   | 83.33% | 5/6   | 100%   | 4/4  | 92.42% | 61/66   |



During this sprint, we worked on testing the majority of the front end and the server. We managed to get around 80-90% of the front end tested and 60-70% of the back end tested. We will need to separate the server file into more files to better track each page's functions and components.

## Retrospective

For this sprint, we did not get as many points done as originally intended, getting 12 out of the 18 points done. This was mainly due to competing responsibilities outside of this project, underestimating the point value of the stories, and difficulties actually completing those stories. However, we did manage to flesh out a lot of the crud operations and complete a lot of the website. All in all, we are still keeping up with the workload and will finish the website on time.

## Next Iteration Planning

For the next iteration, we will work on the most important and most difficult feature of the website: navigating and managing the guides. This will be the part that will require the most time and knowledge to execute.

## Sprint 4

### Stories Attempted

| ID  | Story Title              | Points | Sprint Done | Total Points per Sprint |
|-----|--------------------------|--------|-------------|-------------------------|
| S3  | Use guide                | 3      | 4           |                         |
| S12 | Assign category to guide | 3      | 4           |                         |
| S15 | Add guide step           | 5      | 4           |                         |
| S16 | Edit guide step          | 3      | 4           | Total Points            |
| S17 | Delete end step          | 1      | 4           | 15                      |

| Member   | Stories        | Hours Worked | Total Points |
|----------|----------------|--------------|--------------|
| Victoria | S3 S16 S17 S15 | 24           | 12           |
| Tim      | S12            | 20           | 3            |

## Testing

No new testing data is available for this sprint.

## Retrospective

This sprint was pretty productive in getting the core functionality of the website to work, such as navigating through a guide and editing the steps of a guide. However, the stories completed lacked polish, and will need their ui updated and the bugs ironed out. Additionally, we

did not write tests for the code due to lack of time, so we will have to go over all of the code and write tests to cover missing lines.

## Next Iteration Planning

For the final sprint, we will focus on polishing up the website to present to the client. This will include debugging some unstable functionality, including comprehensive tests for the code, and cleaning up the website UI to look more presentable. Additionally, we will meet with the client to get their feedback and implement the changes they suggest.

## Sprint 5