

SENIOR DEVELOPMENT PROJECT

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Introduction

Introduction

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When I began this project, I knew that I wanted to make sure that I made connections between the work that I have done in the past professionally as a graphic designer, and the new skills I have developed in the last couple of years.

To do this, I wanted to add functionality to an existing website powered by a Content Management System. In the past, I had worked on a couple of websites (one on WordPress and one with Wix) in which I had felt like there was a lot for me to learn about adding functionality. I felt like it would be extremely valuable to me to expand my knowledge of what was possible and begin to understand best practices. I also wanted to explore connecting APIs and external databases to a site using a CSM. Doing this would solidify my understanding of how I will be able to utilize the skills I've learned right away.

At the beginning of the semester, I had contacted a local business about assisting them with their web development needs. There

were a lot of potential projects available, and all of them were exciting to me. After a couple of weeks, however, it became clear that the business had some internal needs that had to be addressed before development could take place.

I formulated a new plan and had it approved. I decided to create a Dungeons and Dragons hub for my son and his friends. None of the features I was interested in building were unique, but they would be free, which would make them accessible to my audience.

Creation of this site would also give me a chance to create connections between databases and a boilerplate WordPress site. I could explore connection possibilities with existing plugins and learn more about adding functionality. I could also create an environment where users could upload and post content with little to no administrative access.

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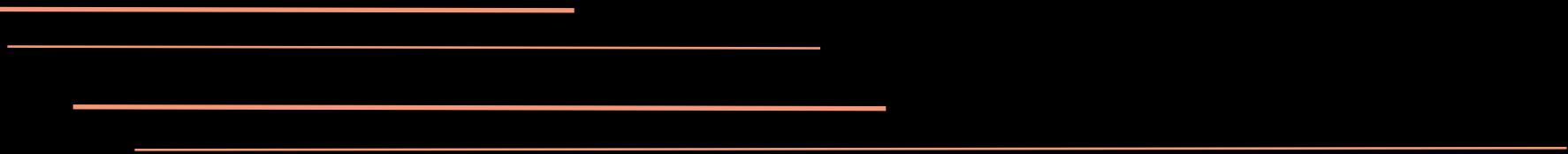
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Primary Goals

Primary goals for this website were concentrated on expanding my abilities as a developer. In particular, I wanted to explore connections between a website and other services that it utilizes to fulfill its needs. I decided on the following objectives as concrete goals of this project:

1. Create a basic website powered by WordPress that looks clean and professional.
2. Develop user registration process, enabling login and upload of content. Let content be searchable when the user has granted permission.
3. Utilize both an external API and uploaded JSON files to power a character generator resource. Explore multiple routes of connection.
4. Create a hub of interactive resources.



OBJECTIVE ONE

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Objective One

Measurable Goals

Create a basic website powered by WordPress that looks clean and professional.

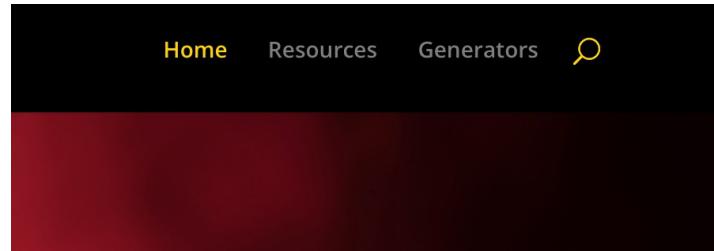
The key to setting these goals was to break down the main characteristics and feel of the website. I also wanted to make sure it looked professional and legitimate. Measurable goals to meet this objective were:

1. Create a website with WordPress containing the following pages:
 - Home
 - Resources
 - Generators
2. Site is live, clean, and has a good flow of information. Everything displayed works.
3. Site is responsive and styling is consistent.

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Items One and Two



1. Create a website with Word-Press containing the following pages:

- Home
- Resources
- Generators

2. Site is live, clean, and has a good flow of information. Everything d

The website is live. The main pages are Home, Resources, and Generators. There is a good flow of information, and everything that is displayed works, including custom CSS that aids in understanding how interaction is possible with each element.

The website is created using Word-Press, and setup involved adjusting settings within the Cpanel to ensure smooth loading and avoidance of MIME errors. A logo and style guide were created to maintain consistency.

Execution

Item Three

Introduction

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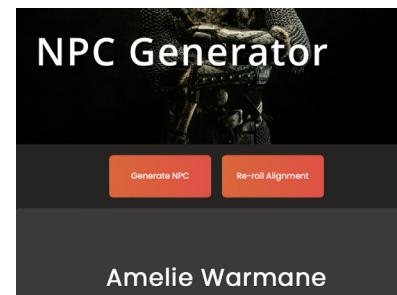
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3. Site is responsive and styling is consistent.

The website is responsive and mobile friendly. Multiple media queries control the site's responsiveness. The styling is consistent throughout. The site is in shades of black and charcoal, with orange and gold highlights. White and very light grey are the colors of most text. Buttons that lead to actions away from the current page have a border with no background, but the border disappears and a transparent background appears on hover.

Register >

Log in

OBJECTIVE TWO

Objective Two

Measurable Goals

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Develop user registration process, enabling login and upload of content. Let content be searchable when the user has granted permission.

User registration, experience, and permissions were the main focus of this objective.

1. User is able to register, log in, and has permission to add and update their own content, including maps, lore and images.
2. Content that has been marked as shareable by the user can be searched.

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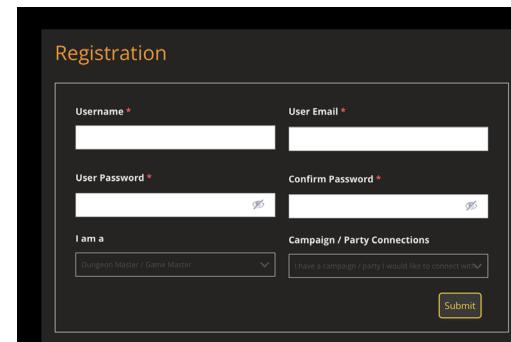
1. User is able to register, log in, and has permission to add and update their own content, including maps, lore and images.

The register button appears on the home page and leads to a registration form. Upon successful registration they are logged in automatically as a subscriber, with no permissions, as their requested role must be approved by an administrator. If they register as a DM, they are requesting the role of author.

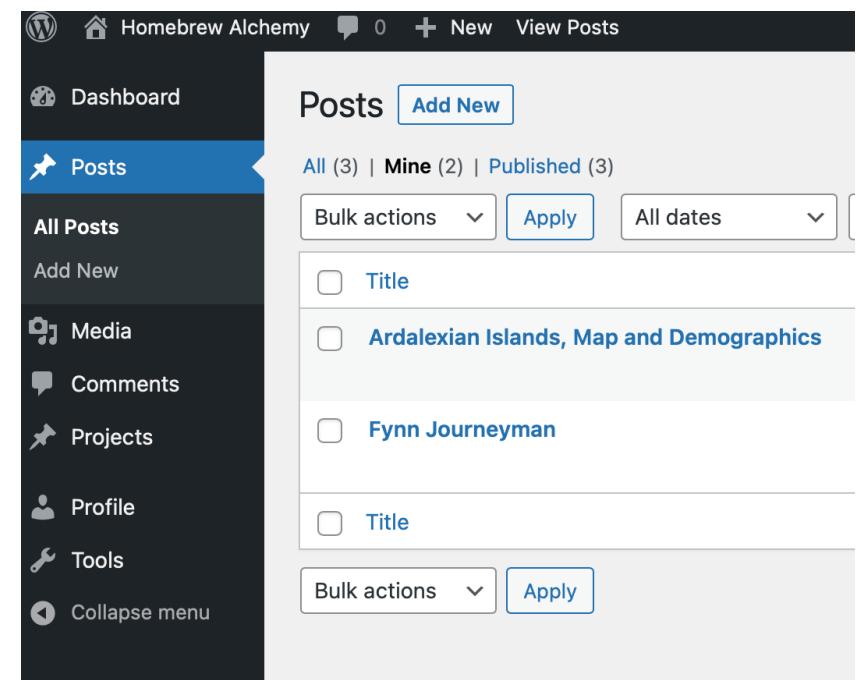
Once that is approved, upon their login they will see an administrative panel that only contains the ability to add and update their own content.

Execution

Item One



A screenshot of a registration form titled "Registration". It includes fields for "Username *", "User Email *", "User Password *", and "Confirm Password *". Below these are dropdown menus for "I am a" (set to "Dungeon Master / Game Master") and "Campaign / Party Connections" (set to "I have a campaign / party I would like to connect with"). A "Submit" button is at the bottom right.



A screenshot of a WordPress dashboard for the site "Homebrew Alchemy". The left sidebar shows menu items: Posts (selected), All Posts, Add New, Media, Comments, Projects, Profile, Tools, and Collapse menu. The main content area shows a "Posts" list with three items: "Ardalexian Islands, Map and Demographics", "Fynn Journeyman", and another item whose title is partially visible. A "Bulk actions" dropdown and an "Apply" button are at the top of the list. The top navigation bar includes links for Home, New, View Posts, Dashboard, and Posts.

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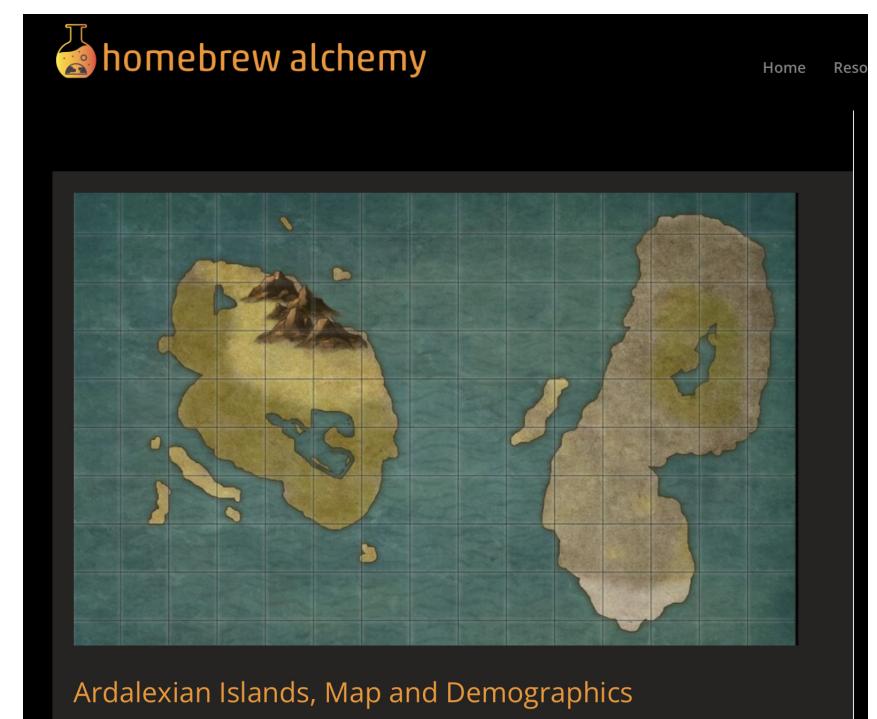
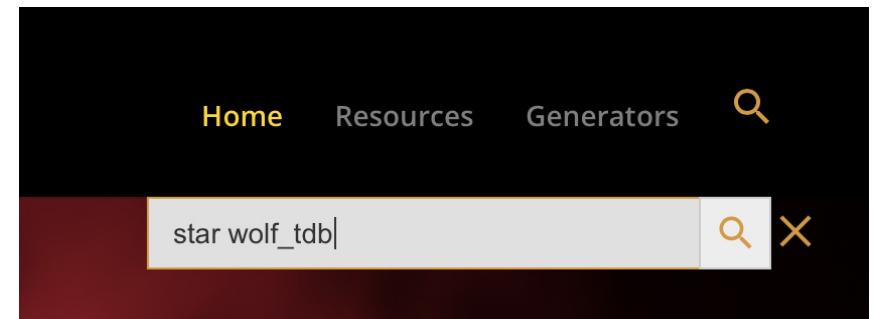
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Content that has been marked shareable by the user can be searched.

A search icon is present in the main nav and when pressed, a search box drops down, with a search and close button. Search results are returned appropriately, and posts are searchable by author, category or keyword.

Execution

Item Two



OBJECTIVE THREE

Objective Three

Measurable Goals

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Utilize both an external API and uploaded JSON files to power a character generator resource. Explore multiple routes of connection.

With this objective, I focused exclusively on creating interactive tools for the user. I wanted to explore more than one way to create these tools and to connect this information.

1. A random NPC character is created using uploaded JSON files which interactively generates a character with name and at least three traits.
2. A random shop generator utilizing an external API is used to create a shop generator which randomly fills a shop with contents as requested by category.
3. Both generators work and are responsive.

Execution

Item One

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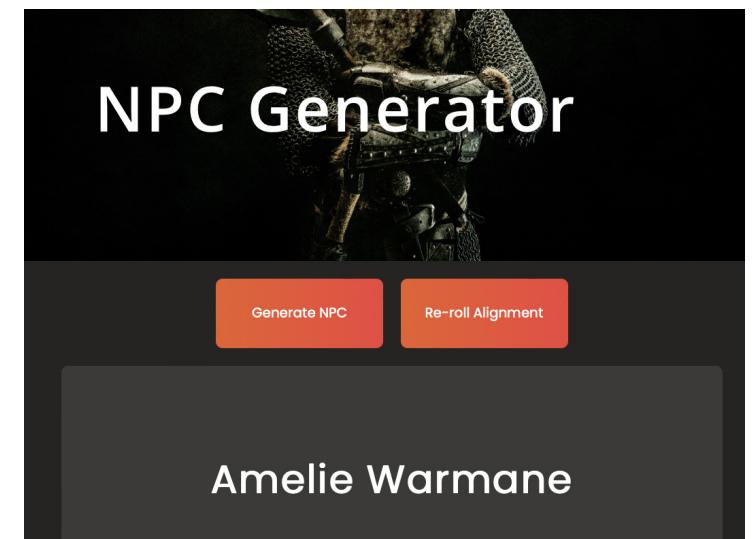
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1. A random NPC character is created using uploaded JSON files which interactively generates a character with name and at least three traits.

This project was really fun. I first made small arrays to make sure that all of the code worked before I adding more variables. The code to fetch the random parameter was fairly easy, because once I had figured out how to randomize and populate all of the fields. The code for this generator was done in JavaScript. Shown is the top of the mobile view (to illustrate responsiveness).



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The generator returns random values for name, appearance, ability scores, personality, plot hooks, alignment and beliefs. The beliefs section will scroll if snippets are longer, so that it all fits within three equal boxes. The buttons all have interesting CSS effects, and it looks great. It surpasses the expectations within the objective.

As shown, the NPC Generator also meets the expectations of Item three within this objective.

Final Product

Items One and Three

The screenshot shows the NPC Generator interface. At the top, there's a header with the title "NPC Generator" and two buttons: "Generate NPC" and "Re-roll Alignment". Below the header is a dark-themed card for the character "Caprise Gregorios". The card is divided into several sections: "Character Details" (Sex: Female, Age: Middle-Aged, Race: Human, Occupation: Beer Merchant, Orientation: Straight, Relationship Status: Recently Divorced, Children: None), "Ability Scores" (STR: 18, DEX: 15, CON: 18, INT: 12, WIS: 18, CHA: 15), "Alignment" (Lawful Good, Lawful Neutral, Lawful Evil, Neutral Good, True Neutral, Neutral Evil, Chaotic Good, Chaotic Neutral, Chaotic Evil), "Personality" (described as loving, dramatic, and polite), "Beliefs" (scrolling snippets like "I don't want to carry anyone's burden." and "Fuck all this shit, man."), and "Plot Hook" (described as infecting townspeople with Lycanthropy). The background of the card features a close-up image of a person in chainmail armor.

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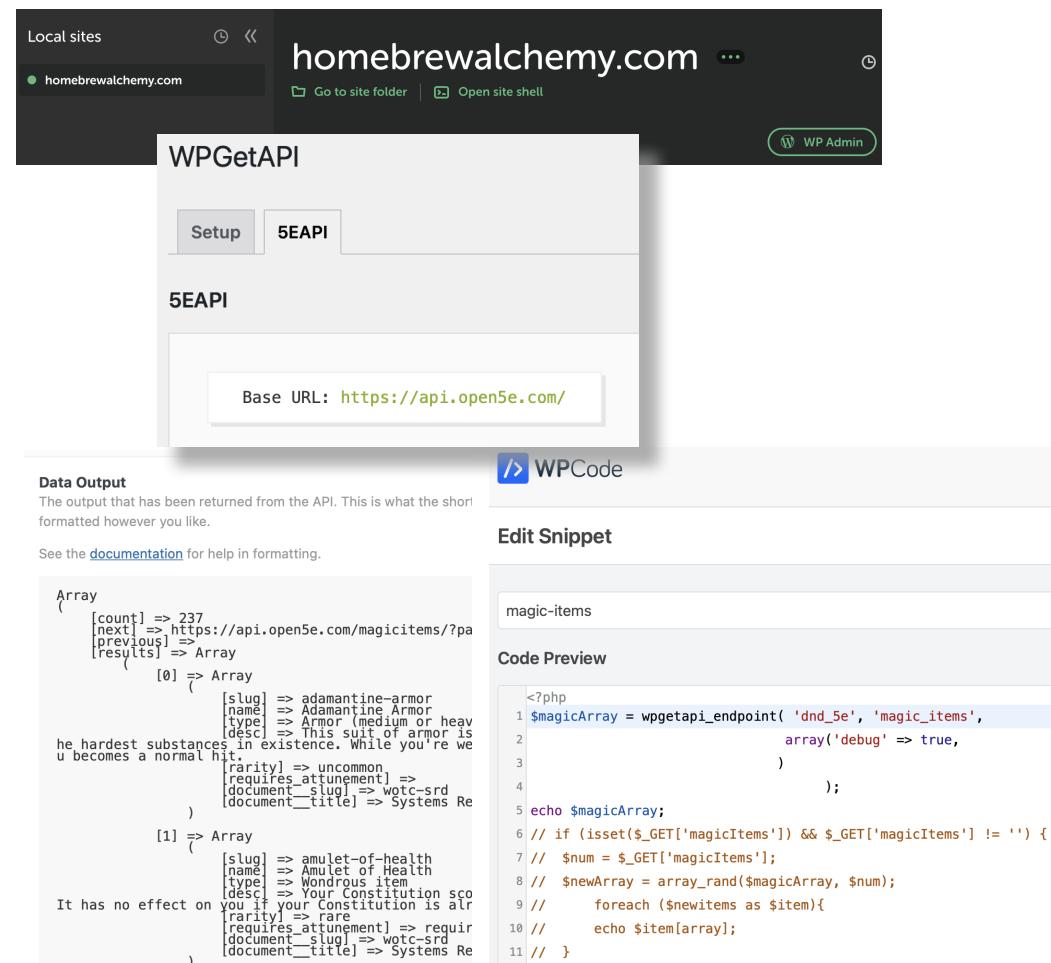
Execution

Item Two

2. A random shop generator utilizing an external API is used to create a shop generator which randomly fills a shop with contents as requested by category.

One thing became very clear to me while I was researching all of the ways I could connect to an API -- I needed to set up a staging site. I used Local to set up the staging site and uploaded all of my theme files so that I would have the same environment.

I found that one of the easiest ways to set up a connection to an API was to use a plugin. I used WPGetAPI, and I was able to connect to a D&D API very easily and return some data. I then filtered it the data in PHP.



The screenshot shows a browser window for `homebrewalchemy.com`. A modal dialog titled "WPGetAPI" is displayed, with the "5EAPI" tab selected. Inside the modal, there is a "Base URL:" input field containing `https://api.open5e.com/`. Below the input field, there is a "Data Output" section showing a JSON array. The array contains an object with keys: `[count]`, `[next]`, `[previous]`, and `[results]`. The `[results]` key points to an array of objects. One object in this array is described as follows:

```

Array
(
    [count] => 237
    [next] => https://api.open5e.com/magicitems/?page=2
    [previous] =>
    [results] => Array
        (
            [0] => Array
                (
                    [slug] => adamantine-armor
                    [name] => Adamantine Armor
                    [type] => Armor (medium or heavy)
                    [desc] => This suit of armor is
                    [rarity] => uncommon
                    [requires_attunement] => true
                    [document_slug] => wotc-srd
                    [document_title] => Systems Re
                )
            [1] => Array
                (
                    [slug] => amulet-of-health
                    [name] => Amulet of Health
                    [type] => Wondrous item
                    [desc] => Your Constitution score
                    [rarity] => uncommon
                    [requires_attunement] => requires attunement
                    [document_slug] => wotc-srd
                    [document_title] => Systems Re
                )
        )
)

```

The "Code Preview" section below the modal shows the following PHP code:

```

<?php
$magicArray = wpgetapi_endpoint( 'dnd_5e', 'magic_items',
array('debug' => true,
));
echo $magicArray;
// if (isset($_GET['magicItems']) && $_GET['magicItems'] != '') {
//     $num = $_GET['magicItems'];
//     $newArray = array_rand($magicArray, $num);
//     foreach ($newArray as $item) {
//         echo $item[array];
//     }
// }

```

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This generator returns random contents for a shop by category. The user can specify the amount of items in each category. The event fires only in that category, so if changes are needed in only one category, the other sections are not erased. The fields clear as soon as the button is pressed again to be replaced with new random content.

The Shop Generator also meets all of the criteria for item three of this objective. It works and it is responsive.

Final Product

Items Two and Three

Contents by Category

Specify how many items of each type this shop should hold:

Magic Items

3 8 Get Some Magic Items

Weapons

2 8 Get Some Weapons

Armor

2 8 Get Some Armor

Miscellaneous Items

4 8 Get Some Odd Items

Shop Contents

Magic Items

Ring of Free Action
Staff of Charming
Wand of Wonder

Weapons

Greatsword
Greatclub

Armor

Mage Armor
Ring Mail

Miscellaneous Items

A spooky looking doll with many patches
A penny whistle
Seven marshmallows
A saddle for a large, unidentified animal (is it for a dragon??)



Contents by Category

Specify how many items of each type this shop should hold:

Magic Items

3 8 Get Some Magic Items

Weapons

2 8 Get Some Weapons

OBJECTIVE FOUR

Objective Four

Measurable Goals

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Create a hub of interactive resources.

This objective was intended to stretch me the most, and it's one that I gave myself the most room to explore. It is intended to be a page for sharing and exploring.

1. Links with featured free resources appear, including links to featured content created by users.
2. Page displays a dice roll simulator plugin which is consistent with style guides.
3. All resources and content work and are responsive.
4. User-created content supports comments.

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Links with featured free resources appear, including links to featured content created by users.

Several links to free map-making resources are prominently displayed, as this is a highly sought-after source with the audience. The section below that row containing the button “Read More” is a post slider that runs through the top five most recent user-uploaded content. All links work and the post slider leads to the full post by the user.

Execution

Item One

The screenshot shows a website dedicated to map-making resources. The header features a wooden texture background with a compass rose and the word "Resources". Below the header, there are four featured tools:

- Inkarnate**: Turn your ideas into incredible fantasy maps with Inkarnate's easy-to-use online map-making platform.
- Azaag's Fantasy Map Generator v1.88.00**: A free open source tool which generates fantasy maps. You may use auto-generated maps as they are or edit them.
- DGNFog**: This mapping software works perfectly for the fog of war aspect of dungeon crawling, featuring narrow corridors and big rooms with furniture, statues, trapdoors and staircases.
- Donjon**: Within the Fractal World Generator, Dungeon Masters are able to change the shape of the map as well as dictate the amount of water to land and ice to land.

At the bottom of the page, there is a post slider for a map titled "Ardalexian Islands, Map and Demographics" by starwolf.tdb. The post includes demographic information: Population - city: 14,300 Population - rural: 680 Exports: fish, iron, volcanic minerals, emeralds. A "Read More" button is visible at the bottom right of the slider.

Execution

Item Two

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Page displays a dice roll simulator plugin which is consistent with style guides.

I went down a little bit of a rabbit hole on this item. I decided that this was one item that would be simple to build as I attempted to learn some basic Python. I had never even looked at Python before, so there was a bit of a learning curve. I used a few open source code compilations that I found on GitHub to form a bit of a template and built my own. I ran into issues getting it to work as a plugin on my staging site, so I reached out to a mentor about this specific issue. He led me to a plugin that actually worked, and I ended up using that one with a few modifications.

After completing the project, which works, I decided it actually better belonged on the generator page, so I moved it there.

The screenshot shows a dice roll simulator interface. At the top, there is a promotional message for a random shop generator. Below this, a large button labeled "Start Building" is highlighted with a yellow border. To the left, there is a small map of a river and forest area. On the right, there are input fields for "Number of dice" (set to 4), "Type of die" (set to 8), and "Modifier" (-1). A checkbox for "Display all rolls?" is checked. A "Roll" button is present, and the result "Result: 11 (3, 1, 5, 3)" is displayed below it.

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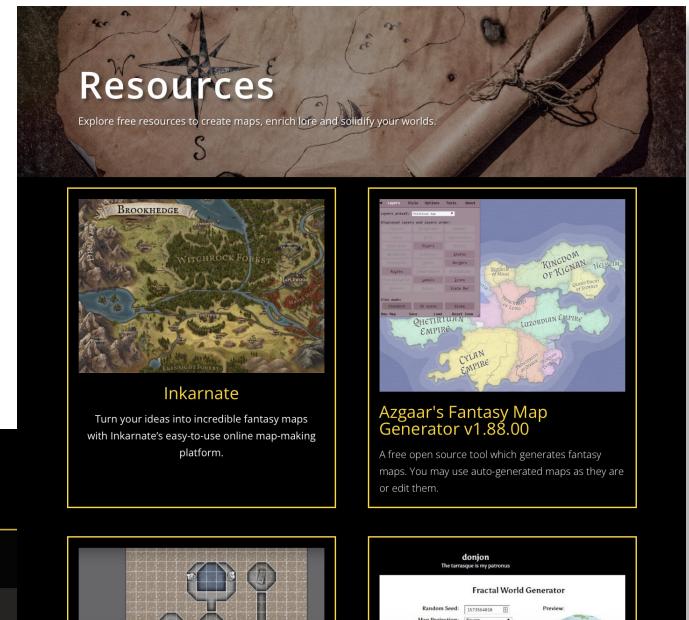
Items Three and Four

All resources and content work and are responsive.

User-created content supports comments.

The Resource page looks great, all of the content works, and it is responsive.

Comments are enabled and display consistent with style guides. Comments are excluded from the search criteria.



Then Fynn slept.

Inkarnate
Turn your ideas into incredible fantasy maps with Inkarnate's easy-to-use online map-making platform.

Azgaar's Fantasy Map Generator v1.88.00
A free open source tool which generates fantasy maps. You may use auto-generated maps as they are or edit them.

donjon
The terrace is very porous.

Fractal World Generator
Random Seed: 31705458
Map Projections: Spherical Mercator
Preview
Reply

1 Comment

 **homebrewalchemadmin** on December 9, 2022 at 2:34 pm (Edit)
Cool backstory! Can't wait to see where this character goes.

Submit a Comment
Logged in as starwolf_tdb. Edit your profile. Log out? Required fields are marked *

Comment *



GROWTH

Expected Growth

Declared in Proposal

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These were my declared expectations of growth within my original proposal:

- Experiment with React.js to create a search app

I planned to experiment with the abilities of React to create a search feature, possibly to search the characteristics of an item.
- Experiment with Python while creating a dice roller

I was interested in dipping my toes into Python. I wanted to see how it compared to JavaScript and PHP.
- Learn about WordPress hooks and their uses.

Because WordPress functionality so often depends on using the “right” hook, I wanted to gain a better understanding of these hooks.

Realized Growth

Honed skills

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This project stretched me in many ways. My goals of strengthening existing skills were realized in the following ways:

- **Enlarged my knowledge base of WordPress CMS best practices.** I didn't have much understanding of "best practices" going into this, and I gained not only a working understanding of some best practices, but also a good understanding of **why** they are considered best practices.
- **Increased my ability to perform CRUD operations.** The practice I got in writing and re-writing code to fetch from the API and from the uploaded files really helped to solidify my grasp of these operations.
- **Creation and utilization of child themes.** I had created a child themes in a class once, but this experience helped me to really understand the merits of placing all alterations of CSS in one place. Changing things with a visual builder can be convenient, but if you have to revert or alter that, it can be a pain to try to find it.
- **Expanded my understanding of PHP and JavaScript languages.** Rewriting the same functionality in another language was interesting. I gained insight into which language was better for adding functionality, and which was better suited for handling the transfer of information.

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Realized Growth

New Skills

I far exceeded my goals for acquiring new skills. Some of the skills and experiences I acquired were unexpected, as there were methods that I was unaware of and opportunities to grow seemed to spiral out endlessly. The real challenge of this project was to keep my growth focused. New skills gained were:

- **Knowledge of and experience with WordPress plugins,** such as WP Forms, Custom Fields, Code Snippets and WP Get API. I focused on understanding how they work, how they can be helpful, but also how they can bloat the website and slow the server.
- **Connecting to an external API through a CMS.** This was a lot easier than I had originally thought, as there are so many plugins to help manage that. The challenge was to understand how to connect the plugins and use the right hooks to achieve the functionality I wanted.
- **Creation of a WordPress plugin created with Python.** This was meant to be just an experiment to help me learn Python, but I became driven to figure out how to publish it to WordPress. A mentor finally advised me that a plugin with similar functionality already existed, and that I should look at that code. That advice was invaluable as the issue was that I did not prefix my hook names properly.
- **Insertion of custom JS and PHP code into a website run by a CMS.** I had added custom CSS before, but I had been hesitant to try to add anything that altered functionality. I found that setting up a staging site as suggested by a mentor removed this block.

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Realized Growth

New Skills, continued

- **Exploration of WordPress action and filter hooks.** Going into this project, I knew nothing about hooks, only that they existed and that they are key to adding functionality “the right way.” Again, it was incredibly comforting to try this out on a staging site. I don’t feel like I gained mastery of this, but I did successfully use a `do_action()` and `apply_filters()`.
- **Creation of a React fetch application.** I had never used React before and it was really fun to explore the possibilities available. Again, as always it was tempting to get sucked into the possibilities here, and I was advised by a mentor to learn the skills, but not to sink too much time into reverse-engineering something that already existed.
- **Exploration of jQuery and Bootstrap components.** I didn’t really understand what either could add to a program or application, and it was valuable to learn more about what each could offer.
- **Creation and use of a web scraper.** This was not a part of my original plan, rather a tangent that I had to be saved from. I found some open source code for a web scraper while searching for help understanding Python, and immediately thought that it would be really helpful to use one to compile data for the generators. I then thought it would be interesting to use one to scrape the five most recent D&D Beyond announcements to put on the website. My mentor advised me to stop working on this “side quest”, as it was unrelated to the core goals of the project, but I still consider all of the information and skills explored as valuable additions to my learning experience.

PRESENTATION

Presentation

Presentation Practice Center

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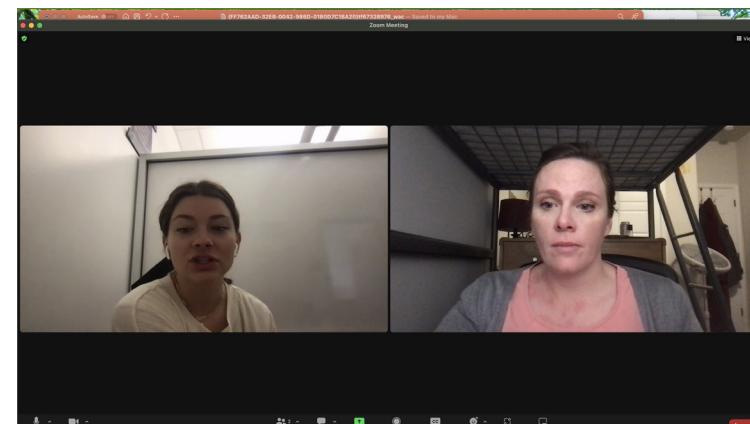
Presentation

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I met with a tutor at the Presentation Practice Center via Zoom. I did not send her a recording prior, as I feel like I perform better knowing that I can just re-record it. In the heat of a live presentation, however, I sometimes stumble and needed the practice of performing under that pressure.

Her feedback was very valuable to me. She advised me to only list bullet points to reduce the amount of time I spent reading from the screen, and to add more visuals.

Click the button to see her feedback email.



Presentation

Final Presentation

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I invited four of my mentors, but only two were able to attend. In attendance were a peers of students from my Advanced CSS class, as well as a person that had little understanding of the technology behind the project. I had to constantly remind myself to not get too technical and to explain more.

I had a scary moment during my presentation as immediately before it, I had altered a line of code, and it effectively disabled my generators. I found out they were disabled during the presentation! I quickly found and reverted that code so that it would be operational for the demonstration. I felt embarrassed that it didn't show up initially, but proud that I immediately knew what I had done and was able to quickly fix it. It was a jarring reminder to never make alterations without testing all affected elements afterward.

Click the button to go to my YouTube post of this presentation.

FINAL COMMENTS

Final Comments

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I found that this project stretched me in many ways, and some of them were unexpected. I didn't expect to learn some of the skills and processes I learned. I also did not expect the kind of guidance I would ultimately need from mentors who helped me. I expected to get more coding and debugging help than anything, but the most valuable interactions I had were reminders to not get sucked into something that was not a part of the core objective.

I feel like this was a project that I could comfortably spend years working on and could flesh out infinitely. There is just so much room to add additional functionality. Toward the end of the project it felt like my mind was exploding with new ideas because of all of the interesting things I was seeing that others had done.

I feel like I met my core objectives, and exceeded my growth projections. This experience lit a fire in me about what is possible for me as a developer.

Final Comments

Links

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Linked to the button below is a repository of most of my files (that were stored locally).

Please also visit the page and play with the generators and dice roller.