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Proposal Summary:

We proposed making an all-in-one website for RPI students and faculty. This website would contain information about the RPI campus to make it easy for new students to adjust to college life, and for current students to have an easy resource for finding information about different parts of the campus. We believed that this was necessary because RPI's official websites are more about the school's academic programs, and there are very few useful resources about the actual campus. Additionally, the official websites are fragmented into many different locations, such as the library, gym, Sodexo, sis, LMS, and so on. Our website should be able to give as much information as we can while working as an easy landing page for the many different important websites for RPI students.

Project Description:

Our project was broken up into a few key features. We have a webpage that is dedicated to giving information on RPI's dining hours, an interactive map of the RPI campus, and a discussion forum for students to interact. When you first go to our landing page, all of these are accessible through decorated buttons, as well as a header containing our logo which is universal across our website's pages.

The dining hours page displays all 17 dining halls and restaurants run by Sodexo and quickly displays which buildings are open and closed by a colored ribbon to the left of the building's name. You can click on a building to see its hours broken up into different parts of the day, such as breakfast, lunch, and dinner. This information is updated by the day to be as accurate as possible, so viewing the page on a Sunday will give different results than on a Wednesday. All of this information was taken from Sodexo's website and placed into a static database. You can also click on a marker icon next to the restaurant's name to take you directly to the restaurant's location on the interactive map.

Our map is meant to help students explore campus, find buildings that may catch their eye, and easily find information about the building just by clicking on it. The map was made from OpenStreetMap. We used uBlock Origin to block unwanted UI elements from the OpenStreetMap page and then took 13 screenshots of the campus which we stitched together in Gimp. The map allows users to drag their mouse pointer to scroll the image, as well as use their trackpad for scrolling. In the map, 78 buildings on the RPI campus are clickable map areas, which were made using an online tool that lets us click on the image and gives us the HTML for the map area. When you hover over a building, your mouse pointer changes to indicate it's clickable, and when you click on it a div which was hidden above the building contains the name of the building, a picture of it, and a written description of the building and its uses becomes visible. The data for

the map areas and divs is stored in a JSON file which is read with Ajax once the website loads, and the images we used were taken from the internet and downloaded as jpegs. When you want to find a specific building, you can click the search button to open up a search bar and enter the name of the building you want to search for. The search function matches the words in the search to the words in the name of the buildings, so the more words a building name has in common with your search words the higher it will be on the results. After clicking on a building's name in the results, the map will automatically scroll to the location of the building you clicked on.

The discussion forum is meant to allow students to make posts and ask questions of other students. This is useful because there is a lot of information that you can't easily find online, but is known by some people on campus. This forum thus allows users to learn things that they couldn't figure out from searching the internet, and it can also be used to communicate to us, the developers, about the website. In its current form, the discussion forum doesn't offer many different other tools like the RPI subreddit for this type of function, but it can be altered to offer useful features tailored specifically for RPI students such as a page dedicated to club announcements.

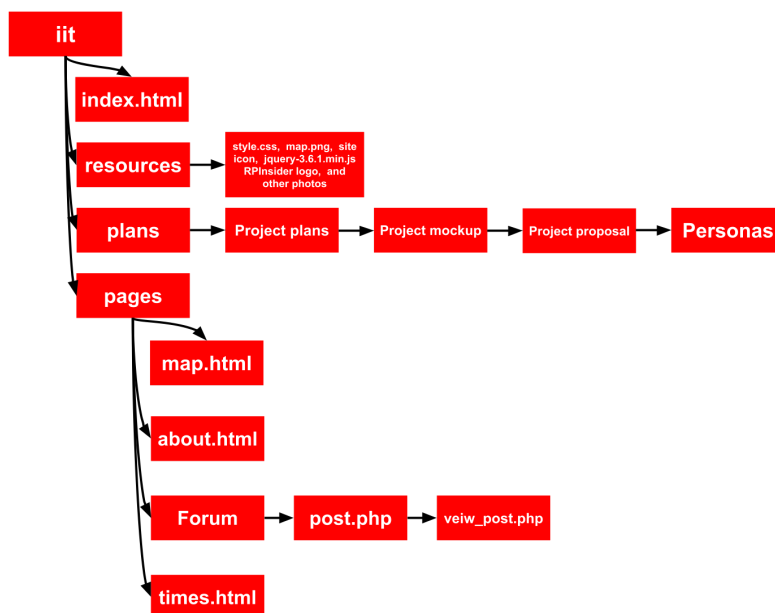
Challenges:

For our website, we ran into the issue of the CORS policy with the Rensselaer dining website. What this means is we can just go and parse from our website to it so we need a server-side script to run node.js to extract the information, but node.js is out of the scope of this course so we couldn't use it. So instead of pulling the dining times from a dynamic source we choose to pull it from a single JSON string. This JSON string was formatted like information that node.js pulled the information down from the Rensselaer dining website so that it would be able to after this course implement the node.js. But this made parsing it to extract information extremely tedious, we had to use javascript to format into an array that we could read.

The map was initially intended to have buttons to zoom in and out, however, this idea had to be scrapped due to the many problems it caused. One issue was that the scrolling data was all in pixels which needed to be changed to match the level of zoom, however, this may have been fixable. The main issues were the scaling location of the map and the space that was created by zooming out. The only method we could find to zoom the map was to scale the image using CSS. This means that the map would grow and shrink within its containing div. When scaling, the map needed a point of origin to grow from. Unless this point was directly in the center of the user's screen, this scaling would cause the map to shift away from the user's screen, so that the location they wanted to zoom in or out on would move away from them, potentially offscreen. When shrinking the image to zoom out, the overflow space within its containing div would not shrink, causing the ends of the div to become empty white space. Combined with the

other main issue, this leads to times when hitting the zoom-out button would cause the entirety of the map to move away from the user, instantly filling their screen with white, where they would then need to find the map. We tried many methods to fix this, however we couldn't get anything to work, so we decided to cancel this feature. Making the map itself was another large challenge. We wanted the map to cover the entirety of campus, and we wanted it to be a sharp image no matter how zoomed in it was. If we used a single screenshot from OpenStreetMap, it would either be impossible to cover the whole campus, or the map would be very low resolution and the text would be meant for very zoomed-out users. We solved this issue by taking many close-range screenshots of OpenStreetMap with tiles meant for that level of zoom, and then precisely stitched them together with Gimp so that there would be no discontinuities.

Information Architecture:



So for our website, we had a single resources folder for our entire project which contains each of our HTML references. This way of formatting our website makes it easy for someone to visualize. We also had only one css file, that was over a thousand lines long. Having one CSS file makes it so each one of our pages has a similar style to each others.

Project Plan:

The RPI website is designed more for prospective students than current students. This means that the website lacks a lot of information that would be useful for RPI students, or has it very segmented and difficult to find. This is especially problematic for new students with a lot of questions about campus and not enough online resources to answer them. Information we believe that should be better organized on one website includes the menu for the dining halls, descriptions of each building on campus and whether they're open, information



about local restaurants and places to eat on campus, and the overall layout of the campus.

This project is intended to serve the students and administration staff at RPI to have a better dining experience while they are here.

Solutions:

- Interactive informational website for all things RPI-related.
- When going to the website, the landing page has all the buildings on campus, tabs for filtering buildings to find ones you want, dining information, a map of campus, and an about page for the website
- The map is of RPI and its surrounding area and is interactive
- Every building is named, and you can hover over and click each labeled place to get information on it.
- You can see if the building's closed or open, a writeup about the building and what it's used for, the classes being held in them, pictures inside and outside the building, and other information, such as the current menu of the dining halls.
- The map can be taken from OpenStreetMap
- Students can review specific food options in the dining halls, and whenever the item comes back into rotation the reviews are visible so students can have help choosing the best food(student & staff interaction).
- Students can favorite a food item, and then they'll be notified when a dining hall is serving the meal(cookies).
- Making a more user-friendly UI that is more aesthetically pleasing than the Sodexo website.
- Making the UI appropriate for Desktop and Mobile.

Tasks:

Isaac: map, photos
Alex: UI, scraping
Omer: UI, scraping
All: Presentation

Changes:

- Project name/logo
- Timeline updated
- Added a project README in the repository
- Figured out how to embed an OpenStreetMap map into our website

- The Rensselaer dining website does not allow us to scrape the information by just using jQuery and we will need to use something like node.js or a server-side Python script to parse the Rensselaer dining website.
- Decided to make our map by splicing together screenshots of OSM and adding click-to-drag and zoom features
- Made an initial map with every building having a map area so that they are uniquely identifiable

Expected Timeline:

2/7/2024	2/12/2024	Project Proposal (met deadline)
2/26/2024	3/14/2024	Project Plan (met deadline)
3/4/2024	3/17/2024	Setting up the map (met deadline)
3/4/2024	3/17/2024	Scrape Info from Rensselaer Dining (in progress)
3/18/2024	4/7/2024	UI (remaining)
4/7/2024	4/14/2024	Project Presentation (remaining)
4/14/2024	4/22/2024	Team Project Final Packages (remaining)

Summary:

This project taught us how to develop software in teams. We were all new to using Git, so we all learned a lot about how to communicate and use GitHub to build things together. We used a wide variety of tools, including HTML, CSS, Javascript, PHP, and JSON, and this project allowed us to implement them to fit our designs. This project was also our first time designing software entirely by ourselves, and so we learned how to go through the process of brainstorming, designing, developing, packaging, and presenting which is necessary for jobs in many different fields. In the future, we have many goals for our project. We especially want to make our website update dynamically by scraping external websites. This would let us adjust to changes from the typical schedule of RPI dining, and let us scrape their daily menus, allowing users to sign in and save their favorite meals to be notified when and where they're being served.