Subtle Asian Coders
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SoftDev2 pd6
P #05: Fin
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Subtle Asian Studying

Description

Our project is a website displaying chemical elements in a periodic table and visualizing physics concepts. We will have a section for each subject. On the chemistry side, we will display an interactive periodic table. The users can hover over the element to see a brief overview in a tooltip or click on it to get more detailed information. If time allows, we can display information about each element in graphs that the user can interact with (changing axes, etc.) For the physics side, we will have a list of different physical phenomena that the user can choose to view. Once they are on that page, our site will display a simulation of that phenoma. One interactive simulation could be demonstrating gravitational force, where the user can click and hold their mouse to pull objects closer to their mouse.

API

We will not be using a database for our site. Instead, we will be using a Periodic Table API to pull information about elements of the periodic table. We created the API ourselves by obtaining information about elements online in a JSON format and hosting the API on our droplet.

Javascript Features

We will using Canvas/SVG manipulation (and data visualization with D3 if time allows) as our Javascript features. We use Canvas/SVG to display our physics simulations for each phenoma. We will use D3 to display the periodic table and each element's detailed information.

Bootstrap

We will be using Bootstrap because it has the largest community support with more available templates and themes to draw from. It serves as a reliable front-end framework that packages all the necessary customization tools we need.

Component List

Python/Flask:

- app.py (runs project)
- home.html (allows user to go between physics part and chemistry part)
- physics.html (runs simulations to display physics concepts and principles like magnetism, gravity, and falling sand)
- chemistry.html (displays periodic table, hovering over elements will display important characteristics about given element)

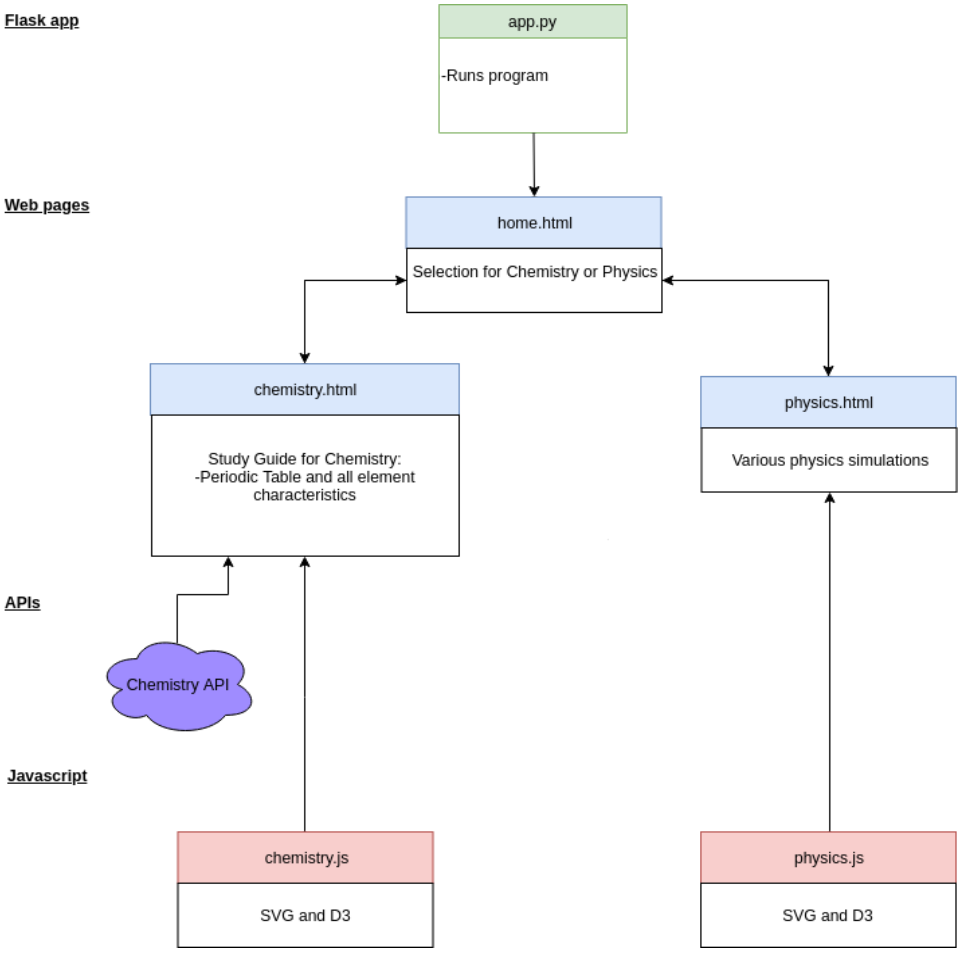
JavaScript:

- chemistry.js (backend for chemistry.html)
- physics.js (backend for physics.html, used to code simulations)

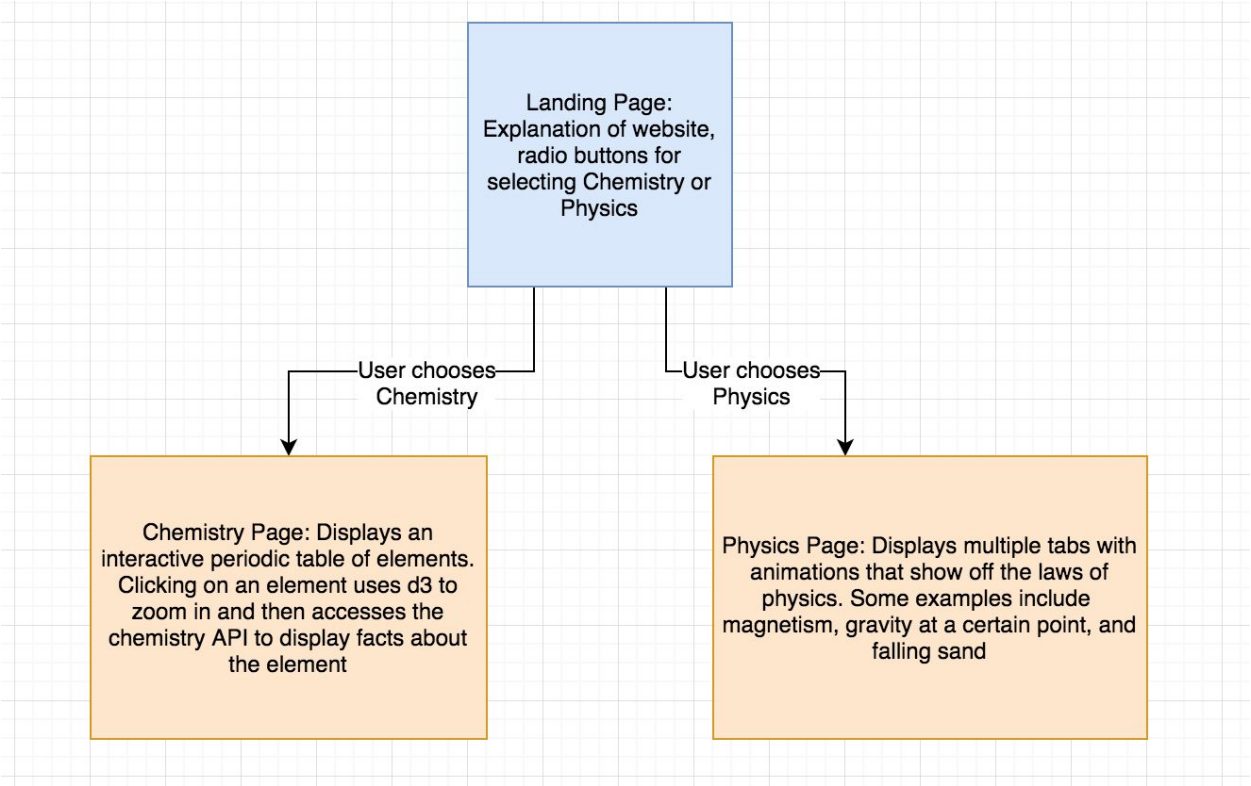
APIs:

- Chemistry API (grabs info about elements for periodic table construction)

Component Map



Site Map


Landing Page: Explanation of website, radio buttons for selecting Chemistry or Physics
User chooses Chemistry
User chooses Physics
Chemistry Page: Displays an interactive periodic table of elements. Clicking on an element uses d3 to zoom in and then accesses the chemistry API to display facts about the element
Physics Page: Displays multiple tabs with animations that show off the laws of physics. Some examples include magnetism, gravity at a certain point, and falling sand

Tasks

PM Ricky Lin: D3 Javascript for physics
Cathy Cai: Linking web pages together, mechanics, layout, and math algorithms (referring to similar simulations to create simpler versions) for physics simulations
Claire Liu: D3 Javascript for chemistry
Kyle Tau: Linking web pages together, mechanics and layout for chemistry periodic table

Step 1 (Minimal Working Version)
- We will connect to the chemistry API, add the barebone structure of the chemistry table, and add the information into the spaces
- We will create a physics landing page with physics formulas, and having a simple animation for a basic physics topic (like magnetism).

Step 2 (Added Core Features)
- Add more Javascript features to the chemistry periodic table (such as hovering, clicking to display pop-ups/pages to explain more information about a specific element), adding more designs, and making each feature more clear and accessible
- Finish physics simulations, better layout of physics formulas (hover to expand a tooltip explaining each variable in the equation)