Significant Figures Practice

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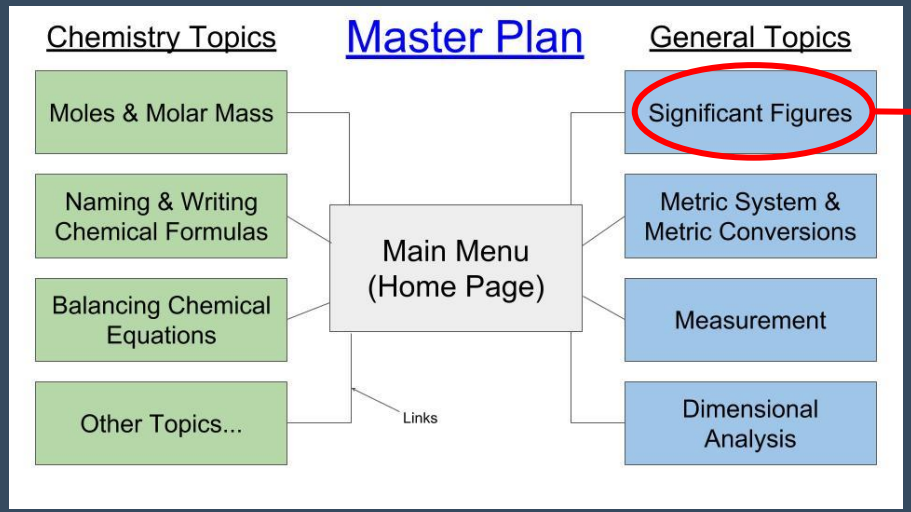
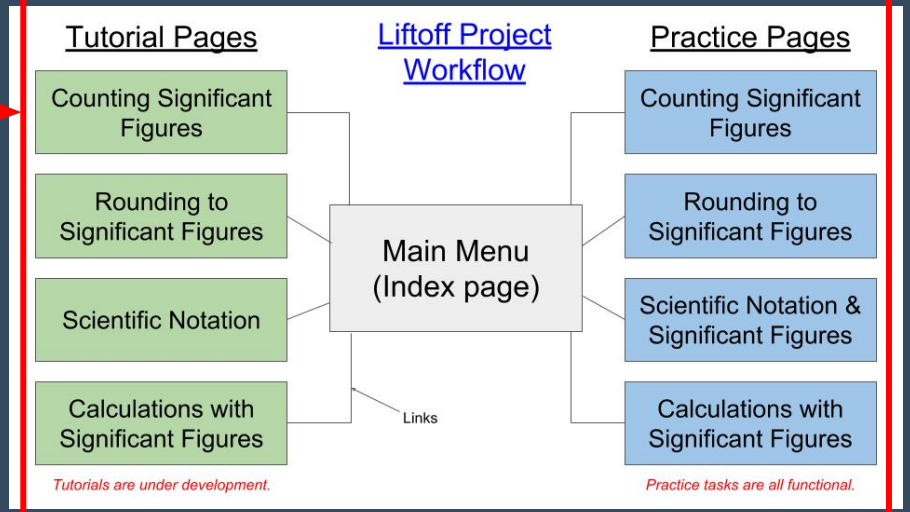
Description

- In high school Chemistry, there are several critical skills that students must master.
- Each of these skills gets better with practice, but how much practice a student needs varies from person to person.
- Online resources exist for the skills, but not all are maintained. Also, there is no single site that provides all of the content.
- This project creates one module that provides teachers and students flexible activities to introduce, reinforce and assess the concept of significant figures.

“Big Picture” View

Project





This project is one module in a larger idea.

Features

- Interactive tutorials to help introduce students to the concept of significant figures.
- "Infinite practice" options that provide immediate feedback to help students master the new skills.
- Optional reporting feature to send student results to the teacher.

Planning - User Stories

- Students access the website and select either tutorial or practice options.
- Students use the tutorial pages to learn about counting significant figures, rounding to sig figs, using scientific notation with sig figs, and considering sig figs when performing calculations.
- Students use the “infinite practice” pages to track their progress as they master each new skill.
- Teachers receive student results to gauge individual and class progress.

Planning - Database

(future feature)

- Teacher table with entries for each class.
- Class table with entries for each student in a given period.
- Student table with entries for progress (e.g. 8 out of 10 correct) in each of the skills.

❏ Students can view their individual progress.
❏ Teachers can view individual student results and overall class results.

Technology Stack

- Python (version 3) with Flask
- Django
- Jinja2 templates
- Bootstrap
- Future plans - add database & login functionality.

Demo

What I Learned

- Python/Flask with Jinja2 templates.
- How to efficiently transfer data between the controller and views.
- How to use sessions in Python to preserve user input after refreshing or switching between views.
- Basic data verification using Flash.

What's Next

- Tracking feature to enhance the "infinite practice" pages (e.g. 9/12 = 75.0% correct).
- Login functionality for teachers and students.
- Establish a database to keep track of and preserve student progress.
- Create the next module to fit into the "Master Plan".