Main Application

- All information required to construct the lab are stored in json files.
- Stores lab files locally, along with maintaining a list of locally stored labs and their versions.
- Compares stored version to newest version hosted on server and downloads updates
- Allows students to navigate and search available labs locally and online to find the one they need. A lab can then be downloaded off the server if required.
- Once a lab is up to date and a user starts it, the main application uses the information stored in the json to construct the lab scene.

Lab

- A blank template with fields and parts intended to be filled in by information from the json files.
- Has scripts designed to manage scene flow, such as keeping track the number of phases the lab will go through, and therefore the number of scenes and transitions it must create.
- There is a script that reads the lab JSON and creates the phases scenes and objects and initializes them with the proper text, objects, and scripts.

Phases

- Always includes A sign in phase, an Introduction phase, then a variable number of modules for information, interaction, and assessment, then a conclusion and submission phase.

Sign In

- Students enter their names, m#'s, class, section, etc.
- Maybe can enable accessibility options here.
- Acceptable teacher and section options could be predefined by the server sending option in the JSON file.

Introduction / Overview

- Displays lab title, names of all the sections of the lab if there are multiple parts.
- Displays lab goals and learning targets
- Gives a short description and overview of what the lab will cover, or some material meant to pique interest and increase engagement.
- Shows a list tools and skills needed, and accessibility concerns.

Custom Modules

- Modules for displaying information in interesting ways, and gathering responses from assessments. Can have a variable number
- Information modules:
  - **Info**: for reading text or instructions, or viewing videos and figures. Could be spread out in 3-D or be in multiple pages on one panel.
  - **Interaction**: one or more objects that can be transformed via user interaction. Can have popups with information when an object is selected. Objects could perform an action when clicked, and a minimum amount of interaction could be required before advancing.
- Assessment modules: answers are recorded and sent to server.
  - **Multiple Choice**: show text or objects and have users select one option.
  - **Sorting**: show a variable number of objects, have users drag and drop to sort.
  - **Interaction**: This time, object states are recorded as answers.
  - **Other**: other possible modules

Conclusion

- Closing information and remarks
- May have an honor code statement of some sort.
- Have a final form submission and maybe an answer review with the ability to jump back to a question for correction.

Lab Constructor / JSON Reader

- Reads in the lab name and other information, plugs into the Sign In an Overview phases.
- Reds in number, type, and order of custom modules. It constructs the module objects or scenes, filling in data from the JSON as it goes.
- Fills in Conclusion page and sets answer information destination once the lab is submitted.

Lab JSON File

- Downloaded from server and stored on device by the application
- Has Lab name and version number
- Has information on where to send the results once completed.
- Stored on the device after being downloaded from our server.
- Generated by an external tool.