

**MICHIGAN STATE**  

---

**UNIVERSITY**

# Project Plan Presentation

## clUML: A Browser Based UML Editor

### The Capstone Experience

Team Michigan State University CSE

Benny Schulz

Derek Hubler

Luke Soumis

Isabella Engelman

Colin Davidson

Cam O' Connor

Department of Computer Science and Engineering

Michigan State University

Spring 2024



*From Students...  
...to Professionals*

# Project Sponsor Overview

- University founded in 1855 as the Michigan Agricultural College by Land Grant
- Department of Computer Science started in 1969
- Dr. Charles Owen, -----> Professor of CSE 335



# Project Functional Specifications

## Goal:

- Give MSU CSE students an intuitive UML diagram editor in the browser
  - Replace Visual Paradigm with an embedded editor on the course website

## What our Project will do:

- Support designing class and object diagrams
- Allow instructors to load solutions
- Allow instructors to embed instances of editor in the course webpage (instead of an image)
- Work across all major browsers



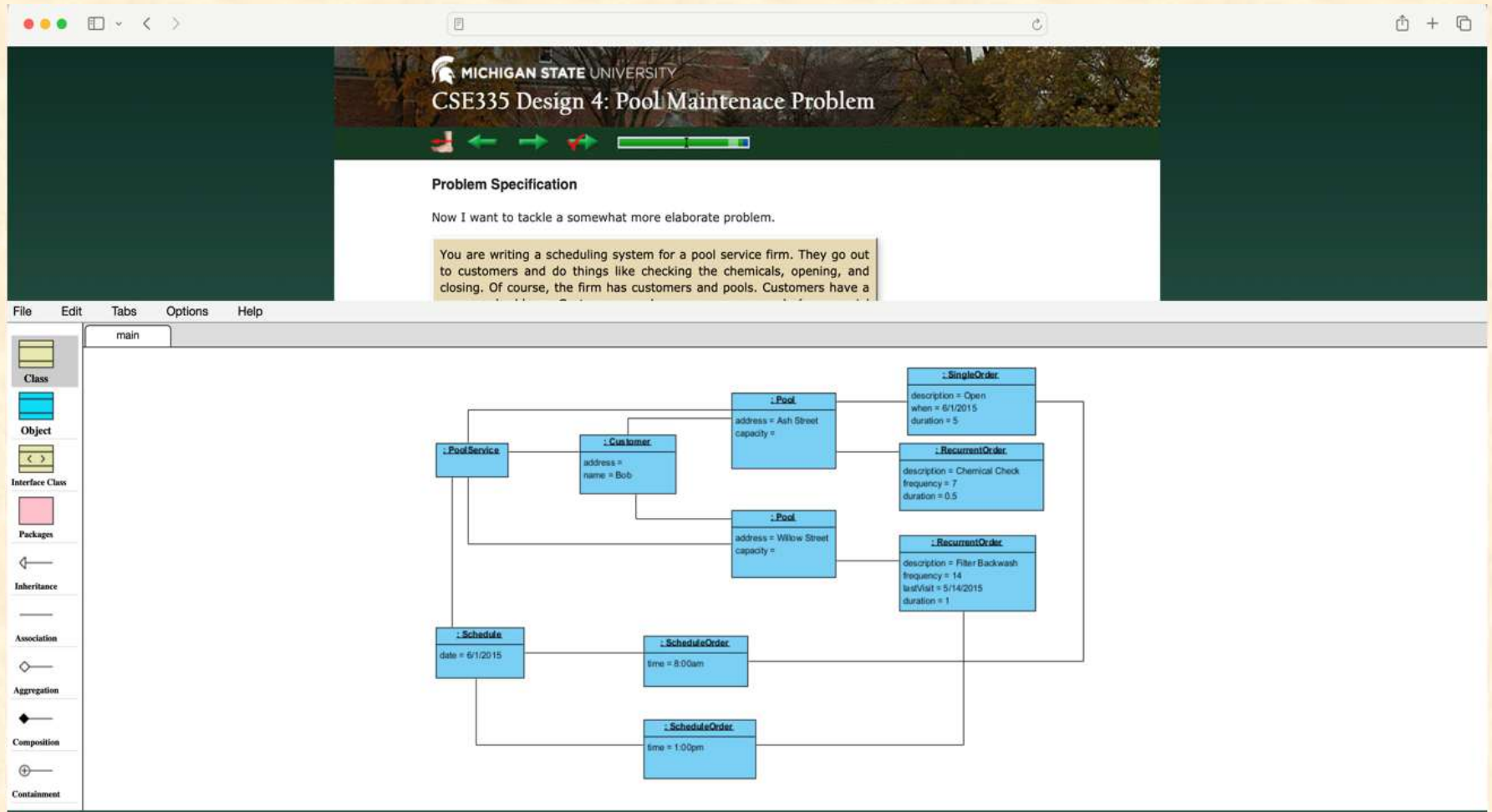
# Project Design Specifications

## Feature Overview:

- Object Diagram Support
  - Option to choose between class and object diagrams
  - Ability to construct and edit object diagrams
- Embed In Web Page
  - Allow for static instances of clUML to embed in course page
  - Unable to be edited
- Redundancy Check
  - Testing feature for students to aid in design
  - Displays redundancy errors to students through dlg box
- Load Solution
  - Ability to load diagram solution for course staff
  - Not visible to students



# Screen Mockup: Object Diagram



# Screen Mockup: Embed In Web Page

MICHIGAN STATE UNIVERSITY  
CSE335 Design 4: Image Save/Load Solution

This is the solution to the Image Save/Load problem from the video. First, here is the problem:

We have a class that holds images. I would like to be able to save and load a variety of file formats (jpeg, gif, png, etc.) and I want to be able to add new file formats later without modifying the Image class.

And a UML diagram for the solution:

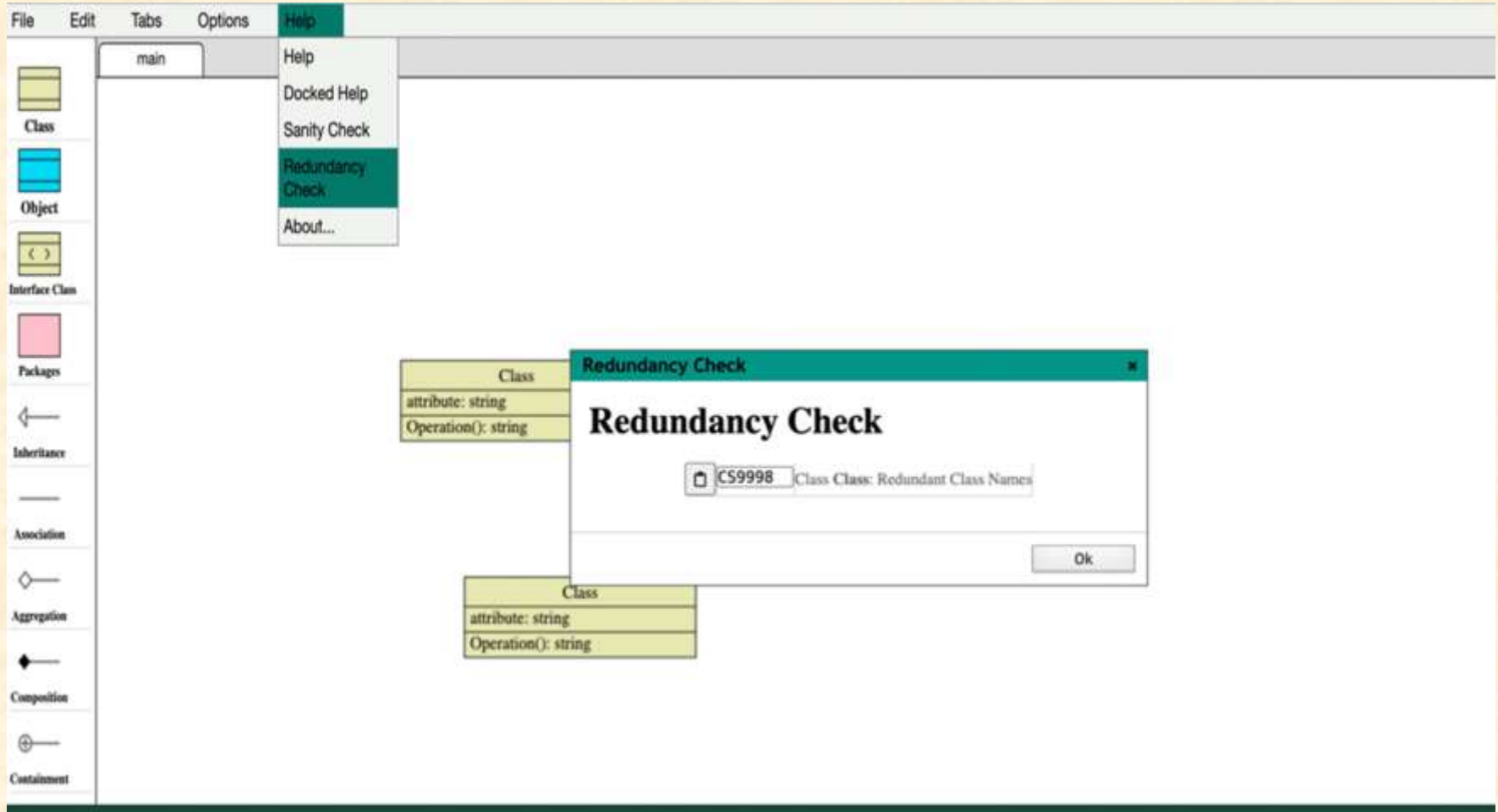
```
classDiagram
    class Image {
        Save(filename: string)
        Load(filename: string)
    }
    class ImageSave {
        Save(image: Image, filename: string)
    }
    class ImageSaver {
        Save(image: Image, filename: string)
        CanSave(filename: string): boolean
    }
    class ImageSaverJpeg {
        Save(image: Image, filename: string)
        CanSave(filename: string): boolean
    }
    class ImageSaverGif {
        Save(image: Image, filename: string)
        CanSave(filename: string): boolean
    }
    Image "0..*" -- "1" ImageSave : images
    ImageSave "1" -- "0..*" ImageSaver : savers
    ImageSaver <|-- ImageSaverJpeg
    ImageSaver <|-- ImageSaverGif
```

Interact!

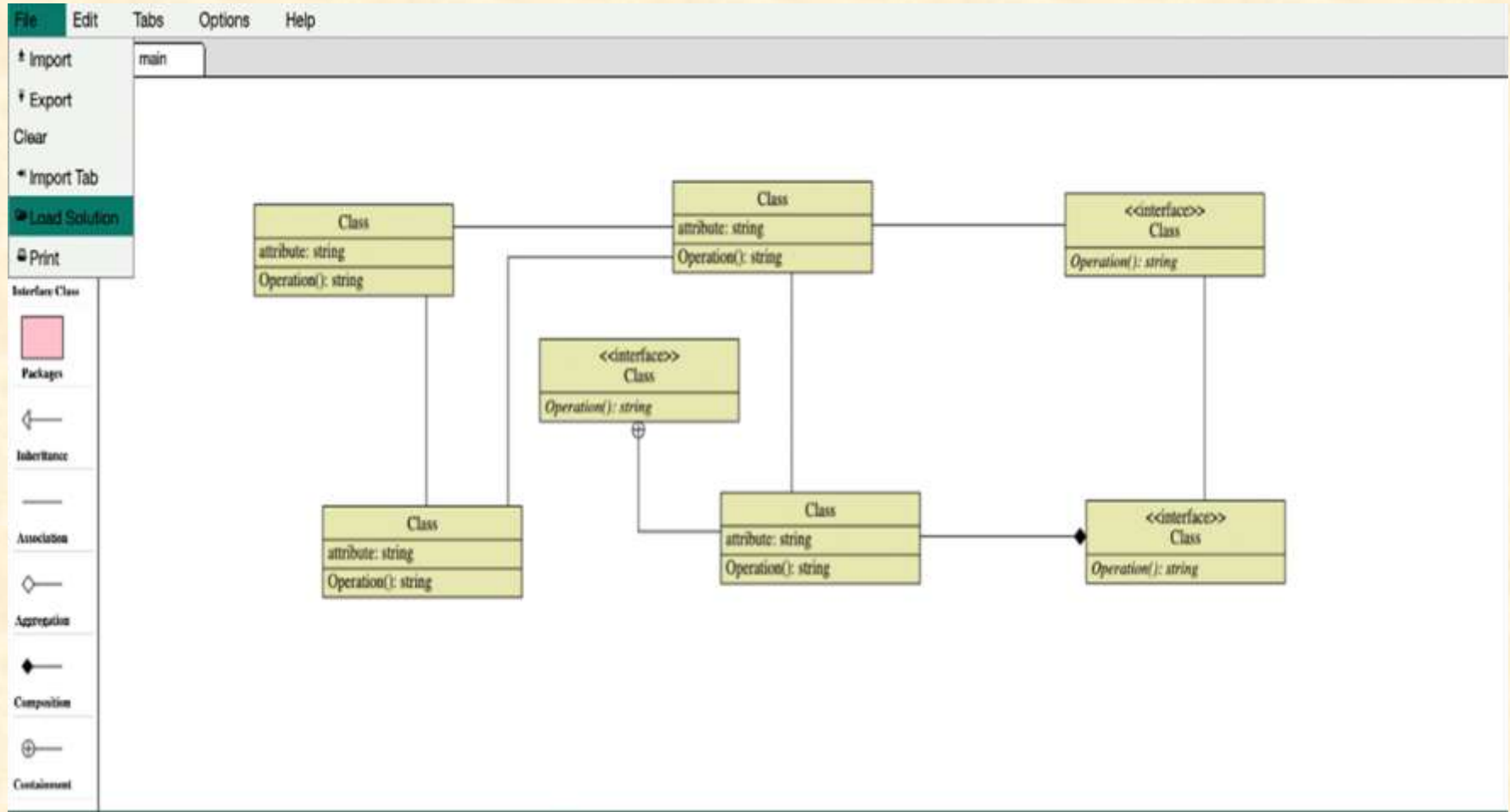
MICHIGAN STATE UNIVERSITY | CSE335 Home Page | Dr. Charles B. Owen | Computer Science and Engineering  
Call MSU: (517) 355-1855 | Visit: [msu.edu](http://msu.edu) | MSU is an affirmative-action, equal-opportunity employer.  
SPARTANS WILL | © Michigan State University



# Screen Mockup: Redundancy Check



# Screen Mockup: Load Solution





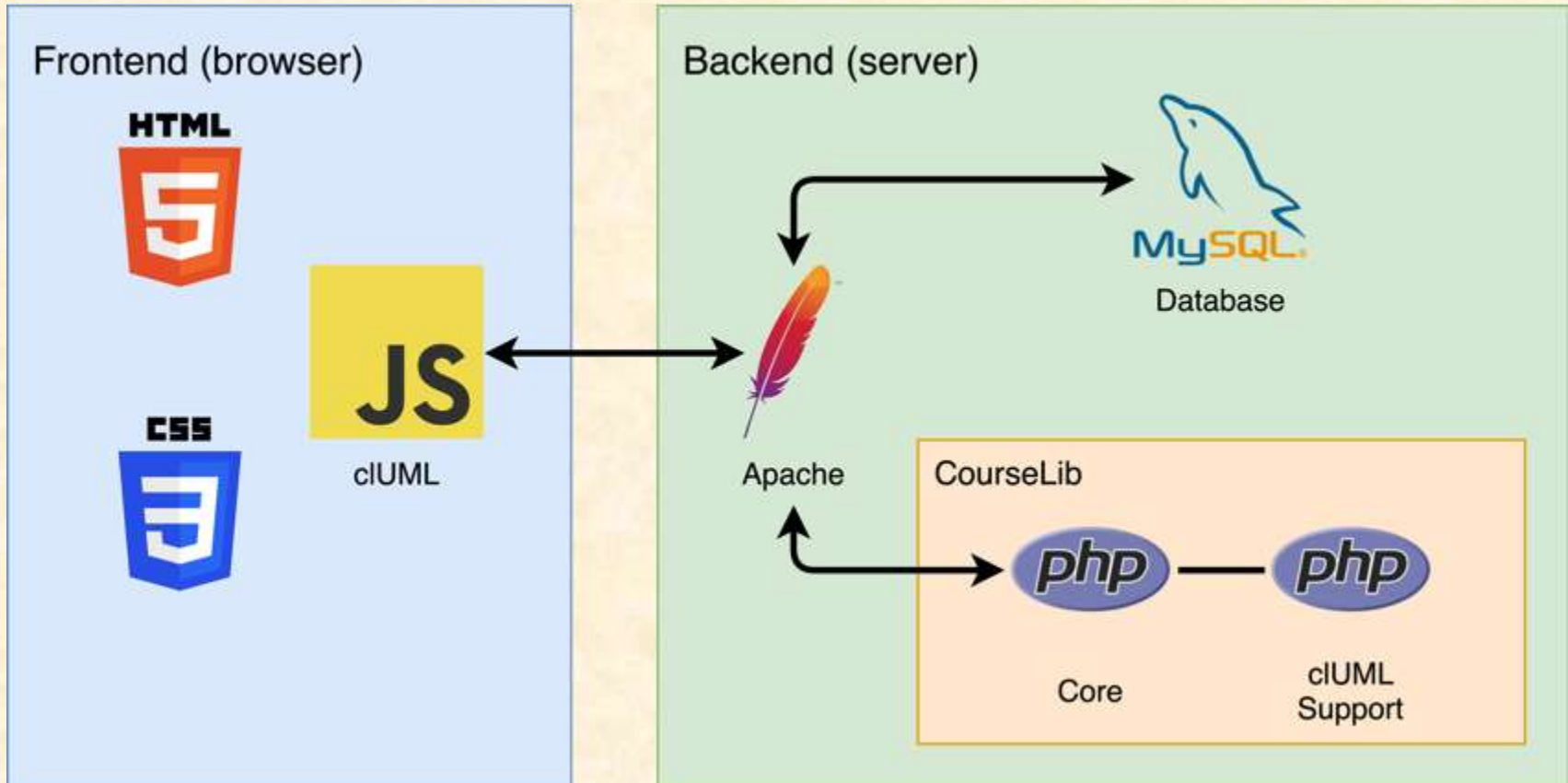
# Project Technical Specifications

---

- Frontend
  - Display object and class diagrams
  - Interactive menus and redundancy checker
  - Tab support for diagrams
- Backend
  - Connection between the frontend and backend
  - Load solution of class and object diagrams
- Testing
  - Test on multiple web browsers, such as Firefox, Chrome, and Safari



# Project System Architecture



# Project System Components

- Software Platforms / Technologies
  - Frontend
    - HTML, SASS (CSS), JavaScript
  - Backend
    - PHP (CourseLib), MySQL, Apache
  - JavaScript Testing
    - Jasmine and Karma
  - Project Management
    - Yarn, Composer, Webpack



# Project Risks

- **Possibility of Grades Leaking**
  - Program interacts with quiz function of class websites. Need to ensure grades cannot be accessed or leaked
  - Proposed support is for system to set a flag based on the results of built-in tests. The tests will be made of assertions instead of JavaScript code
- **Effectiveness With Future Students**
  - Hard to predict if the software will be an effective tool for students.
  - Field test with students if possible and use it ourselves to complete an assignment from CSE 335.
- **Ease of Use**
  - Main reason for creating software is dissatisfaction with Visual Paradigm and some of its bad design elements that make it a hassle to use
  - Gather issues our sponsor has and ones we have from experience and make sure our design doesn't have similar issues.
- **Keep Modularity**
  - The system design is meant to be modular so that it is a package that can be added to the CourseLib website without much refactoring or dependency. An error in clUML should not take down the course site due to dependency
  - Ensure the features we create do not interface/depend on the website as much as possible and need little dependency on the site.



# Questions?

---

?

?

?

?

?

?

?

?

?

