From Students…
…to Professionals

Project Plan Presentation
clUML: A Browser Based UML Editor

The Capstone Experience
Team Michigan State University CSE

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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
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

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:
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

Frontend (browser)
- HTML
- CSS
- JS
cLIUML

Backend (server)
- Apache
- MySQL Database
- CourseLib
  - Core
  - cLIUML Support
- php
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 cUML 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?