

Knight Foundation School of Computing and Informational Sciences

Capstone Learning Management System

Fall 2024 Senior Design Project

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PROBLEM

Small tutors and independent educators often face significant challenges due to the lack of affordable, accessible, and tailored tools for managing their educational content. Existing solutions are either too expensive, overly complex, or fail to meet the unique needs of these tutors. As a result, they struggle to build and organize a comprehensive backlog of questions, categorize content hierarchically for efficient use, and create tailored assignments and quizzes with ease. Additionally, tracking and analyzing student progress to provide personalized feedback becomes cumbersome without proper tools. This gap in accessible solutions hinders tutors from optimizing their workflow, scaling their offerings, and enhancing the overall learning experience for their students.

SYSTEM DESIGN

For our system, we decided to use Angular to build out our frontend and springboot to build out our backend API. During development, we used Docker to deploy our Postgres DB and to host a localstack instance to Mock AWS services like S3.

In production, we deployed our all of our backend services on AWS: S3 for file storage, RDS for our postgres Database, and EC2 to host our Backend. The frontend was manually deployed by the backend at the “/” route.

CURRENT SYSTEM

Some similar existing systems are platforms like **Google Classroom**, **Canvas**, **Quizlet**, etc. The issue is none of these provide the ability for their educators to classify questions into categories to be able to provide students with tailored assignments that fit their needs.

REQUIREMENTS

Some of the requirements that we decided we’re important for our system:

- Have the ability to create courses
- Have the ability to enroll students and tutors in courses
- Have the ability to create questions
- Have the ability to categorize questions and then search through them based on the category
- Have the ability to create assignments with our categorized questions
- Have the ability for students to take assignments
- Have the ability to review student performance on categories

