Classroom Quiz System

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Aim of the Project

This projects aim is to create a system for lecturers and other teaching staff to create quizzes for use within lectures and other teaching locations. Whilst a system like this is already used, Qwizdom[1], the new system aims to improve on it and add features.

Much like with the current system, quizzes will be created before lectures. Lecturers will then run a "session" that students can join via a web interface. The system will have two main parts; questions only, and a slideshow with quiz questions inserted within the sides, much like how Qwizdom is currently used.

Splitting the project into these two parts gives lecturers more choice on what they want to do, having a standalone quiz or integrating it into the slides. Other extra features include the ability for lecturers to download results data and better security of the system compared to Qwizdom.

Progress

The first part of the project is currently in development. A database has been setup to handle lecturer accounts and the storage of quizzes, and it has been filled with some temporary data.

When lecturers login they are presented with an admin panel from which they can view, edit and delete their current quizzes, and also create new ones. This is shown in Fig. 2.

The quizzes themselves only have some simple questions that can be added, like multiple choice, though this will be added to later in development. Additionally the quiz system does not currently let lecturers run these quizzes for students to answer questions.

The development follows an XP based approach, and is currently in its third iteration. Iterations are a single week long, allowing the review to be held in the weekly supervisor meetings.

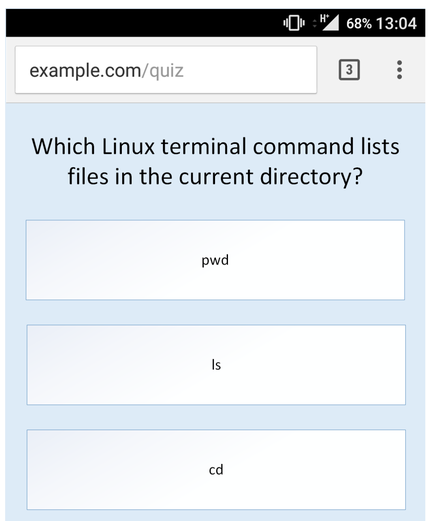

Figure 1. Design mock-up of what a quiz will like to users on a mobile device.

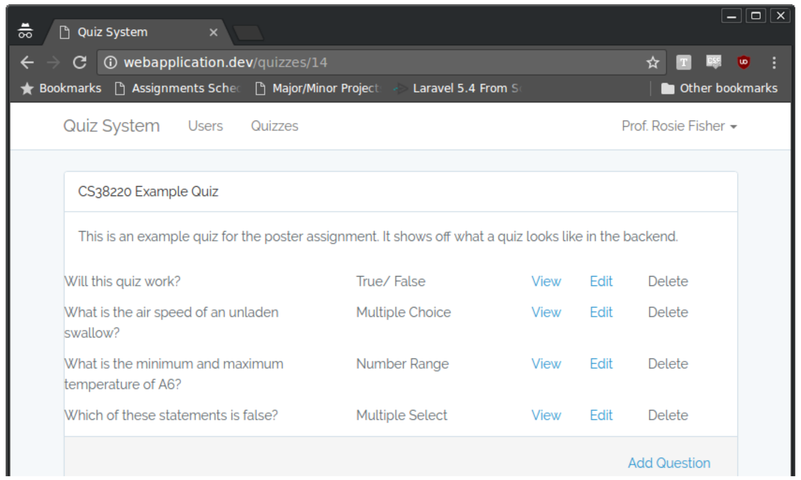

Figure 2. The current administration panel for lecturers, this shows an example quiz populated with some example questions.

Technical Information

The project is being built in PHP and is using the Laravel Framework[2], one of the largest PHP frameworks used. Laravel encourages the use of MVC for applications, and allows the quick and easy creation of the various components needed in short commands, such as controllers or models.

During development, test driven development was chosen to try and improve the quality of the code being written. PHPUnit comes pre-installed with Laravel 5 projects so this was setup fairly quickly before development. Another XP practice used was continuous integration, Travis[3] was selected as the CI tool to use due how easy it was to use with the Github repository for the project. Travis has been set up to run the PHPUnit tests and also PHPLint to check syntax, it runs these tests whenever the master branch in the repository is pushed.

The current admin panel for lecturers is composed of two controllers, quizzes and questions, which provide standard CRUD operations for quizzes and questions via a number of views.

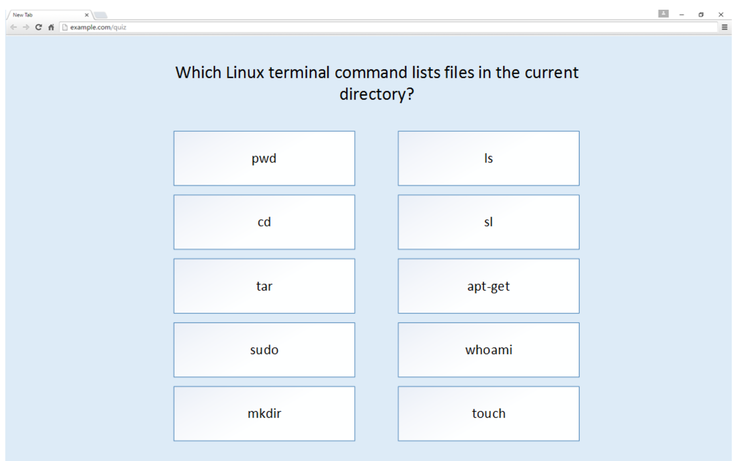

Figure 3. Design mock-up of what a quiz will look like to users viewing in a browser.

Remaining Work

The next stage of work is to allow lecturers to run joinable sessions that display the quiz questions, and thus allow students to answer them with some form of results page for the lecturer. Fig 1 and Fig 3 show the design of the front-end for students.

How to run a joinable session is not currently understood and so some spike work will have to be carried out to try and build a prototype. Similarly some spike work will have to be done on the lecturers results view. This view will show the results of the questions being answered in real time, and a technology that might be able to cope with that is using web sockets, which Laravel 5 supports.

Once this is completed the second part of the project will be the focus. This part involves the lecturer being able to show a slideshow populated with both normal slides and quiz questions that can be answered. The specifics of how this will work have not been finalised, but the two main routes that can be taken are to either use HTML-based slides or to create some extension for Microsoft PowerPoint that allows the slides to be streamed via a browser.

The HTML based slides would be simpler, allowing it to be run entirely in browser, however the majority of lecturers who will use the system currently used PowerPoint or other free alternative slideshow programs. Building an extension for these will be challenging, but due to the project using an Agile approach, a decision does not have to be reached now.

Future Work

Some of the future extensions that could be carried out include:

- Giving the option of streaming slides using either HTML based slides or via a slideshow application, rather than the single approach that will be taken in this project.
- Integrating the users with the University system to easily allows lecturers to login rather than need to create a new separate account.

Further Information

[1] Qwizdom UK Ltd, "Qwizdom UK," [Online]. Available: http://qwizdom.com/ [Accessed March 2017]

-This project is heavily based on Qwizdom and it would serve as a good source of extra reading.

[2] Laravel, "Laravel - The PHP Framework For Web Artisans," [Online]. Available: https://laravel.com/ [Accessed March 2017]

-The Laravel framework has a lot of documentation that explains much the framework more in depth.

[3] Travis CI GmbH, "Travis CI, " [Online]. Available: https://travis-ci.org/ [Accessed March 2017]

-Travis CI is the continuous integration tool used within this project.