Requirements

Functional

Lecture Side Requirements

1. Log in to system and access Lecturer interface.
2. Create “Classes” that contain questions.
3. Set questions.
4. Customise question settings, such as:
   - (a) question visibility (Hidden, Public)
   - (b) answers options available (A, B, C, D or True/False, etc.)
   - (c) answers visibility (Shown after answer is given, or all users respond, etc)
5. View responses to questions visualised in a clear way (Graphs, etc)
6. Have the option to display the responses on a Dotti like device.

Student Side Requirements

1. Log in to system and access Student interface.
2. Join “Classes”.
3. Answer questions.
4. Get feedback on answer depending on question settings.

Non-functional

System Requirements

1. Accessible by users of all abilities and professions.
2. Usable in a classroom setting i.e. set up in the limited time of a lecture.
3. Cheap enough to be deployed throughout the campus.
4. Portable enough to be moved from classroom to classroom.
5. Secure enough to store users passwords, possible exam questions. Encrypted.
6. Flexible, as different courses have different questions.

Technology Used

Raspberry Pi

A Raspberry Pi is a credit card-sized single-board computer developed by the Raspberry Pi Foundation. It is useful in this project as it is cheap, portable, and powerful enough to perform well enough to do what is required by this project.

It will be used as a local Web server that hosts the web application and is accessible through connecting to it on a wi-fi direct enabled device.

JavaScript

JavaScript is a client based, high-level programming language. It is used largely on Web Applications.

This is what the main chunk project will largely be written in, using AJAX to send, and retrieve, data from the database.

JQuery

JQuery is a framework for JavaScript which brings loads of additional features to it, including better mobile compatibility.

Materialize

Materialize is a JavaScript framework, built heavily around JQuery, that allows users to create websites that follow the Google Material design. It also allows websites to be responsive depending on screen size, making it ideal for this application as it will be used over a range of devices.

This is used as the framework for the Web Application.

Wi-Fi Direct

Wi-Fi direct is a Wi-Fi standard that enables devices to connect and communicate without using a wireless access point. It communicates with more than one device simultaneously at Wi-Fi speeds.

This will be used to connect the various Wi-Fi direct enabled devices to the Raspberry Pi so the devices are able to access the local Web application files stored on the Pi.

MySQL

MySQL is a database management system.

This will be used to store the various information required for the web application, such as Student accounts, Lecturer accounts, Questions, Classes, etc.

Software Development Process

Probably Prototyping

Evaluation

Evaluation will involve a live preview of the system in the intended environment with the target end users; a lecturer and students. These users will be recruited by contacting lecturers and inquiring if it would be a system they would be interested in, with students in the class optionally choosing to use the system within the setting or not.

Participants will be expected to simply use the system in place of a normal class-room clicker, with questions being set by the lecturer and the students answering them on their Wi-Fi direct enabled devices.

Questionnaires

Students

1. General opinion on “Classroom Clicker” systems.
2. Usability of the system (compared with previous similar systems, if used).

Lecturers

1. General opinion on “Classroom Clicker” systems.
2. Usability of the system (compared with previous similar systems, if used).
3. Likeliness of using system again as a learning tool.

No personal information is required for this evaluation, and therefore will not be asked for.

Risks

Wi-Fi Direct

There is a possibility that Wi-Fi Direct will not be able to implement the idea of the application fully. This is due to the peer-to-peer nature of the standard. This is still under investigation at this point, with various alternative systems as a fallback, for example:

1. Using the Raspberry Pi as a Wi-Fi access point to access the local Web server.
2. Taking the Raspberry Pi out of the equation, and using a remote Web server for the Web application.