# EXTENDING AWESOME

Final Report for CS39440 Major Project

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This report was submitted as partial fulfilment
of a BSc degree in Computer Science
(inc Integrated Industrial and Professional Training) **[G401]**

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## Declaration of Originality

In signing below, I confirm that:

- This submission is my own work, except where clearly indicated.
- I understand that there are severe penalties for plagiarism and other unfair practice, which can lead to loss of marks or even the withholding of a degree.
- I have read the sections on unfair practice in the Students' Examinations Hand- book and the relevant sections of the current Student Handbook of the Department of Computer Science.
- I understand and agree to abide by the University's regulations governing these issues.

Signature ____________________ Date ____________________

## Consent to share this work

In signing below, I hereby agree to this dissertation being made available to other students and academic staff of the Aberystwyth Computer Science Department.

Signature ____________________ Date ____________________

## Ethics Form Application Number

The Ethics Form Application Number for this project is: **1019**.

### Student Number

110059875

Many thanks to my supervisor Hannah Dee for the guidance and support throughout this project; Sandy for providing a server, and support when it went wrong; and the rest of the staff at Aberystwyth University for the countless hours they put into making it an outstanding place to study.

Thanks to Gareth Williams for providing better Welsh translations than Google Translate ever could, and thanks Keiron O'Shea for the AWESOME prototype upon which this project is based.

Thank you to my fellow classmates, flatmates, friends, and family for the continued motivation, ideas, and encouragement; not only over the past few months, but also the past four years through my university course.

But most of all thank you to Bethany Foskett, for being there with sugary snacks, caffeinated beverages, and occasionally being my rubber duck [1].

## Abstract

The Aberystwyth Web Evaluation Of Module Experiences (AWESOME) is a tool used to evaluate the performance and quality of teaching of modules at Aberystwyth University. The aims of this project are to ensure the prototype version of AWESOME is security audited, refactored to use better programming practices, fully functioning, and is deployed to capture module evaluation data.

# Contents

# List of Tables

# List of Figures

# List of Acronyms

**ASTRA** Aberystwyth Student Records and Admissions

**AU** Aberystwyth University

**AWESOME** The Aberystwyth Web Evaluation Of Module Experiences

**CI** Continous Integration

**i18n** Internationalisation

**MEQ** Module Evaluation Questionnaires

**MVC** Model-view-controller

**OOP** Object-oriented programming

**SME** Student Module Evaluation

**CSV** Comma-Separated Values

**PDO** PHP Data Objects

**SQL** Structured Query Language

**RDBMS** Relational Database Management System

# 1. Background & Objectives

## 1.1. Introduction

The Aberystwyth Web Evaluation Of Module Experiences (AWESOME) is a web-based tool that enables departments to generate personalised questionnaires that get sent out to students to gather feedback about modules, lecturers, or even events such as BCS Show & Tell[1] and other talks.

## 1.2. Background

Departments at Aberystwyth currently have no formalised process of gathering student feedback unlike many other universities. The University of Sussex requires courses to be evaluated through their Module Evaluation Questionnaires (MEQ) [2] which contains seven core quantitative questions and up to ten additional questions at the school-level, module-level or a mixture of both. The University of Westminster have Student Module Evaluation (SME) [3], which is an online questionnaire containing ten questions per module sent via e-mail about modules. There are many other similar examples of module evaluation systems across UK universities, with their main features being personalised, anonymised, and incentivising completion.

At Aberystwyth, some departments such as Geography & Earth Science, and English choose to hand out paper-based questionnaires in lectures for each module a student does. Having a student take multiple questionnaires to provide essential feedback can lead to many issues due to survey fatigue. This can significantly reduce response rates and also have an impact on the answers students provide. The Computer Science department has tried many methods of collecting module feedback with varying successes which will be elaborated upon in subsection 1.2.1.

AWESOME was originally proposed and developed under the Learning and Teaching Enhancement Fund by Dr. Hannah Dee, and work on the prototype was undertaken by Keiron O'Shea. The project was selected as my dissertation project to extend and implement.

[1] BCS Mid Wales Show & Tell: `http://midwales.bcs.org/show-and-tell-events`

Several meetings by the Learning and Teaching Enhancement Committee and Pro-Vice-Chancellor Professor J. Grattan took place to discuss the future of AWESOME and the need for a module evaluation system used university-wide and talks are still ongoing.

### 1.2.1. Module Evaluation Method Analysis

There are several important factors to consider when collecting module evaluation feedback. First and foremost, responses must be anonymised, secondly being able to provide incentives for completion drastically increases response rates. Being able to have students complete the survey in their own time, and also send targeted reminders to complete the survey are also important. If reminders are constantly being sent to students who have already completed the survey, they are likely to get frustrated or annoyed and are less likely to notice another survey e-mail. Consolidated surveys help with fatigue, as students only have to answer one survey. There have been several studies on how survey fatigue affects response rates and poor answer quality [4]. This consolidation only works if the surveys are personalised, as seen from Google Forms response rates in Table 1.1, students are lazy, and they will not skip over modules if asked to.

Table 1.1 shows a feature comparison of current methods of module evaluation at Aberystwyth University and corresponding response rates.

Paper based module feedback during lecture time can have effective response rates because lecture-time is set aside to complete questionnaires. However students usually have to complete one questionnaire per module which can lead to fatigue very quickly.

Qwizdom[2] is a hardware-based voting system, with 'clickers' handed to students in a lecture who can then cast their votes through a powerpoint style questionnaire. Response rates for Qwizdom module evaluations are high for the same reasons as paper based forms. Students are stuck in a lecture for an hour with nothing else to do. One problem Qwizdom does give, is that answers can only be quantitative and not qualitative. Students can't easily input textual comments through Qwizdom so a lot of valuable information is not gathered from students.

Google Forms has been the standard way of running module evaluation questionnaires for the past few years in CompSci. Google Forms provides anonymous answering in the student's own time and can also provide a way of gathering valuable textual comments. One disadvantage of using Google Forms is that there is no way of knowing which modules a student

[2] Qwizdom Homepage: http://qwizdom.com/higher-education/home

is enrolled for, so students have to skip over modules that aren't applicable. This makes the survey confusing and error prone at times and response rates suffer as a result.

AWESOME has been created from the ground-up to address all of these problems. Responses are anonymised, while retaining the ability to see who has, and has not completed the questionnaire yet. This allows for targeted reminders and incentives for completing the survey. Additionally, AWESOME imports data directly from Aberystwyth Student Records and Admissions (ASTRA) which allows all student, staff, and module data to be easily used without lots of manual data entry. This also allows for personalised surveys, asking questions only relevant to modules a particular student is enrolled for. By collecting both Quantitive and Qualitative data, AWESOME can run advanced analytics can be run on the data gathered. The questionnaires sent out are also fully responsive, working on phones to tablets, and to desktop computers by utilising Bootstrap and can be completed at any time by the student.

| Method | Tailored Questions | Anonymous | Qualitative | Quantitative | Incentives for completion | Completion on own time | Targeted reminders | Responsive | Consolidated | Response Rate |
|---|---|---|---|---|---|---|---|---|---|---|
| Paper | ✗ | † | ✓ | ‡ | ✓ | ✗ | - | - | ✗ | 75%[5] |
| Qwizdom | ✗ | ✓ | ✗ | ✓ | ✓ | ✗ | - | ✓ | ✗ | 50%[5] |
| Google Forms | ✗ | ✓ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✓ | 20% |
| AWESOME | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | TBC |

† Anonymity may be compromised when completing paper-based form.

Table 1.1.: Module Evaluation methods at Aberystwyth University

‡ Manual processing is required in order to analyse the data.

[2] Bootstrap Homepage: http://getbootstrap.com

## 1.3. Objectives

The overall objective of the project is to implement AWESOME on the Aberystwyth University network and collect module feedback for the Computer Science department.

This can be broken down into four main aims:

- **Security Audit the AWESOME prototype.** This was a large issue, as there were known security flaws with the prototype and it needed to be looked at immediately before any other work took place.
- **Bring the prototype up to modern development standards.** The program was known to be written in a procedural style, and the security audit brought up the poor Internationalisation (i18n) implementation too.
- **Finish any incomplete functionality.** Many areas of the prototype were half-implemented, but not fully completed. These had to be done before it was useable by students and staff.
- **Run AWESOME on a departmental server.** The main objective was to get a survey sent out to students and collect real-world data. This is the final step in that process.

# 2. Requirements

## 2.1. Features

The following feature list is the one proposed for the AWESOME prototype. The project follows this feature set as a baseline set of requirements.

- **Automatic questionnaire generation per-student** - Generate unique questionnaires per-student, depending on their modules and lecturers.
- **The ability to generate quick mid-term questionnaires** - A one question per module survey with a one to five scale from 'This module is going well' to 'This module has problems'.
- **No need to type in registration details** - Import of module registration data via ASTRA Comma-Separated Values (CSV) export.
- **Targeted follow-up reminder emails** - Only send reminder emails to respondents who have yet to complete their questionnaire.
- **Anonymous responses** - Ability to know which particular student has, or has not completed the questionnaire, but not who has said what.
- **Visually appealing analytics** - Reports available to staff on a by-module, by-department and by-scheme basis, with graphs and textual responses laid out nicely.

## 2.2. Development Practices

AWESOME should be developed using Object-oriented programming (OOP) practices if it is to be maintainable by other developers after the project is over. Internationalisation should be easily extensible and translation strings should be easy to add. Additionally, unit testing is vital if the application is going to be extended further and refactored at a later date for any reason.

## 2.3. User Roles

The user roles in AWESOME are quite simple, there is only an admin and a respondent and each one can only do a few tasks.

- **Admin** - The person who creates the surveys, adds questions and sends them. They can also view results and see who has not yet completed the questionnaire.
- **Respondent** - The recipient of a questionnaire email who fills it in and submits answers. They can also submit feedback about AWESOME if debug mode is enabled.

### 2.3.1. Use Cases

#### Admin User Role

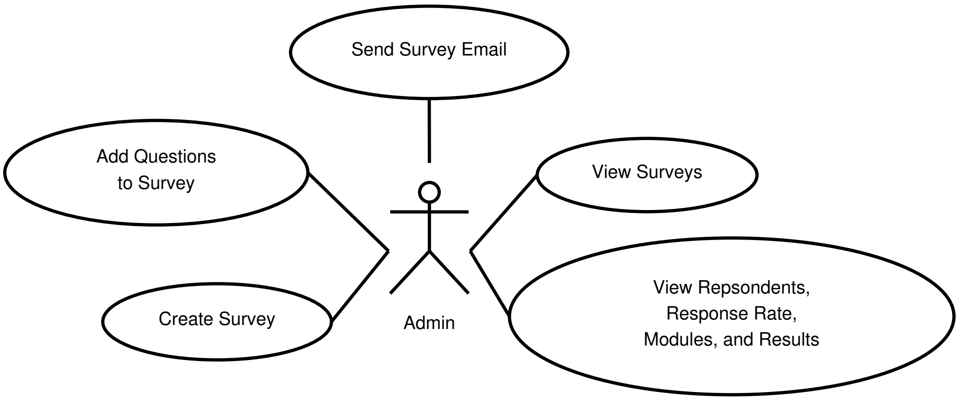


Figure 2.1.: Admin use-case diagram.

Figure 2.1 shows that admins can view surveys, create surveys, add questions to surveys, view more detail about survey such as respondents, response rate, modules, and results. They can also send an email to respondents to remind them to fill in the questionnaire.

### Respondent User Role

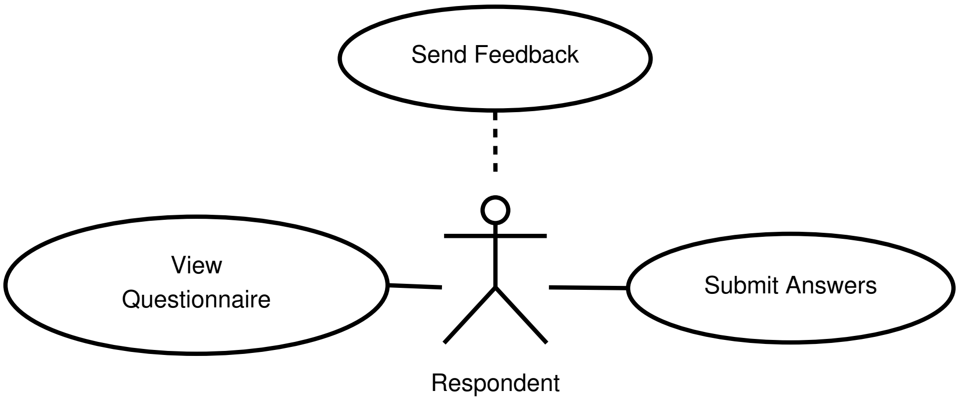


Figure 2.2.: Respondent use-case diagram.

section 2.3.1 shows that a respondent only has one responsibility in the system, and that is to respond to a survey through a link sent via email. They can only respond once, and submitted answers cannot be seen as it would break the irreversible anonymity of the system.

# 3. Design

After the security audit, it was apparent that the majority of the codebase needed to be refactored in order to make it object-oriented. The decision to rewrite the program was not a light one, by rewriting the program, the scope of extensions to AWESOME became much more limited via time constraints.

With the rewrite came the opportunity to utilise both a framework and a design pattern. Frameworks were ruled out under the stance that it had to be deployed on a server without shell access. However later research discovered that this is achievable in Laravel[1], which would have been the framework of choice for several reasons.

Laravel would have provided a complete, and mature Model-view-controller (MVC) framework, as well as an i18n framework and a solid basis for AWESOME. Ultimately, poor research into Laravel on a shell-less server resulted in an attempt to produce a bespoke MVC framework, which, unsurprisingly is harder than it first seems.

## 3.1. Programming Language

The programming language choice was fairly fixed, as it had to be easily runnable on an Aberystwyth University (AU) server. This limited the choice to PHP, but which minor version of it was only found out later in the project which is discussed further in section 4.1.

If this requirement wasn't an issue, Ruby on Rails would have been the ideal candidate for this project, as it already provides an MVC framework and gems for i18n.

## 3.2. Model-view-controller Framework

Since using a framework was ruled out, a custom-made MVC framework was written to support this project. The design of which is laid out in

[1] Laravel Homepage: http://laravel.com

this section and is very heavily taken from the 'Write your own PHP MVC Framework' series of tutorials[6].

## 3.3. Internationalisation Framework

The i18n framework is a standalone OOP module which utilises JSON formatted files with strings for translation.

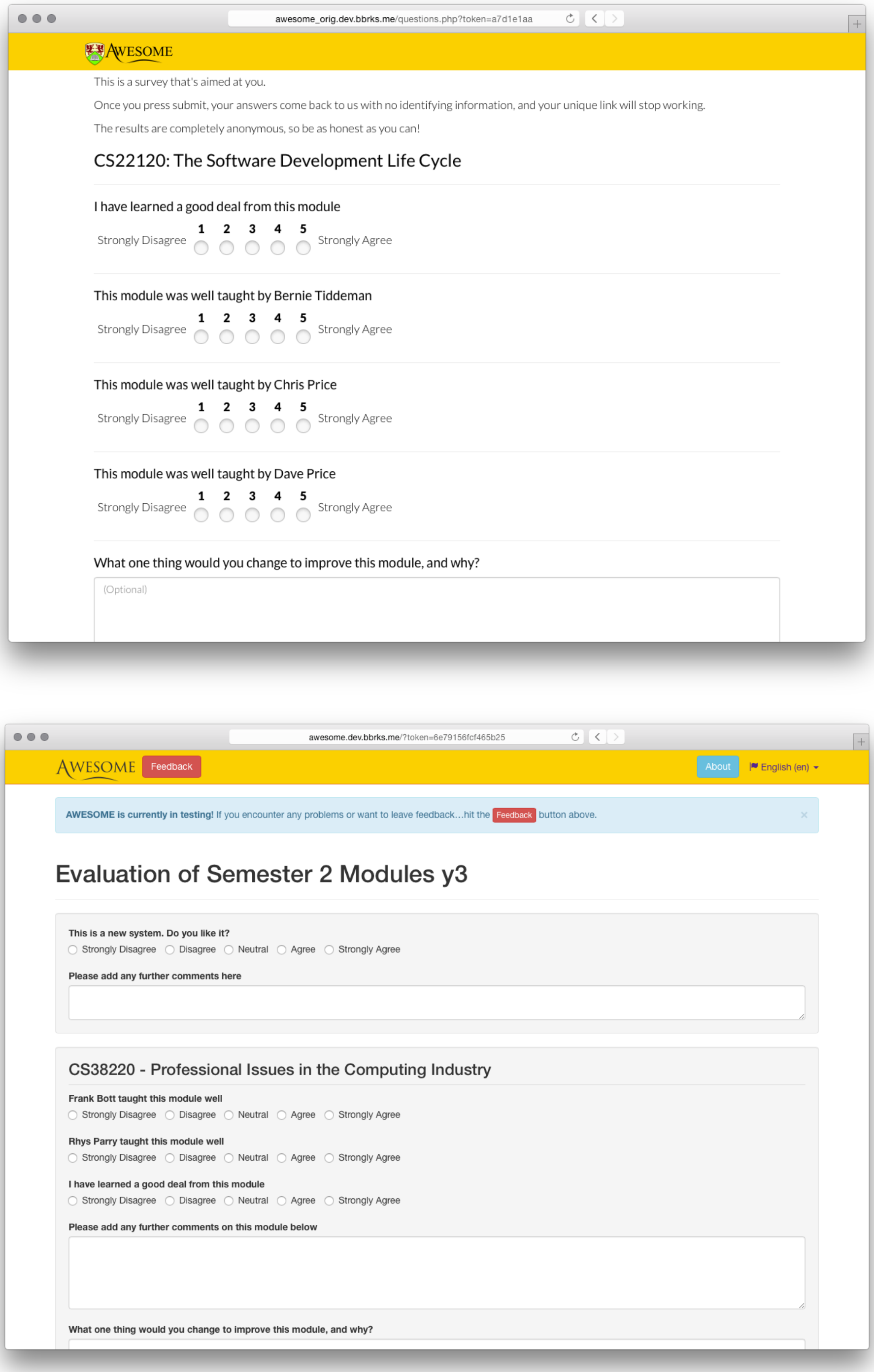
## 3.4. Database Schema

## 3.5. User Interface

The user interface was fairly good on the questionnaire-side in the prototype, so a lot of elements were re-used in that, with a few minor changes.

Figure 3.1 shows a comparison between the prototype version and the submitted version of AWESOME.

The admin dashboard of the prototype wasn't very user friendly. Creating surveys, adding questions, modules, students, and staff was fairly convoluted. Results weren't clear to look at, and took up a lot of space per-question by pie charts, which were unnecessary given the data provided.



This is a survey that's aimed at you.

Once you press submit, your answers come back to us with no identifying information, and your unique link will stop working.

The results are completely anonymous, so be as honest as you can!

CS22120: The Software Development Life Cycle

I have learned a good deal from this module

Strongly Disagree 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ Strongly Agree

This module was well taught by Bernie Tiddeman

Strongly Disagree 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ Strongly Agree

This module was well taught by Chris Price

Strongly Disagree 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ Strongly Agree

This module was well taught by Dave Price

Strongly Disagree 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ Strongly Agree

What one thing would you change to improve this module, and why?

(Optional)

**AWESOME is currently in testing!** If you encounter any problems or want to leave feedback...hit the Feedback button above. ×

Evaluation of Semester 2 Modules y3

**This is a new system. Do you like it?**

○ Strongly Disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly Agree

**Please add any further comments here**

CS38220 - Professional Issues in the Computing Industry

**Frank Bott taught this module well**

○ Strongly Disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly Agree

**Rhys Parry taught this module well**

○ Strongly Disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly Agree

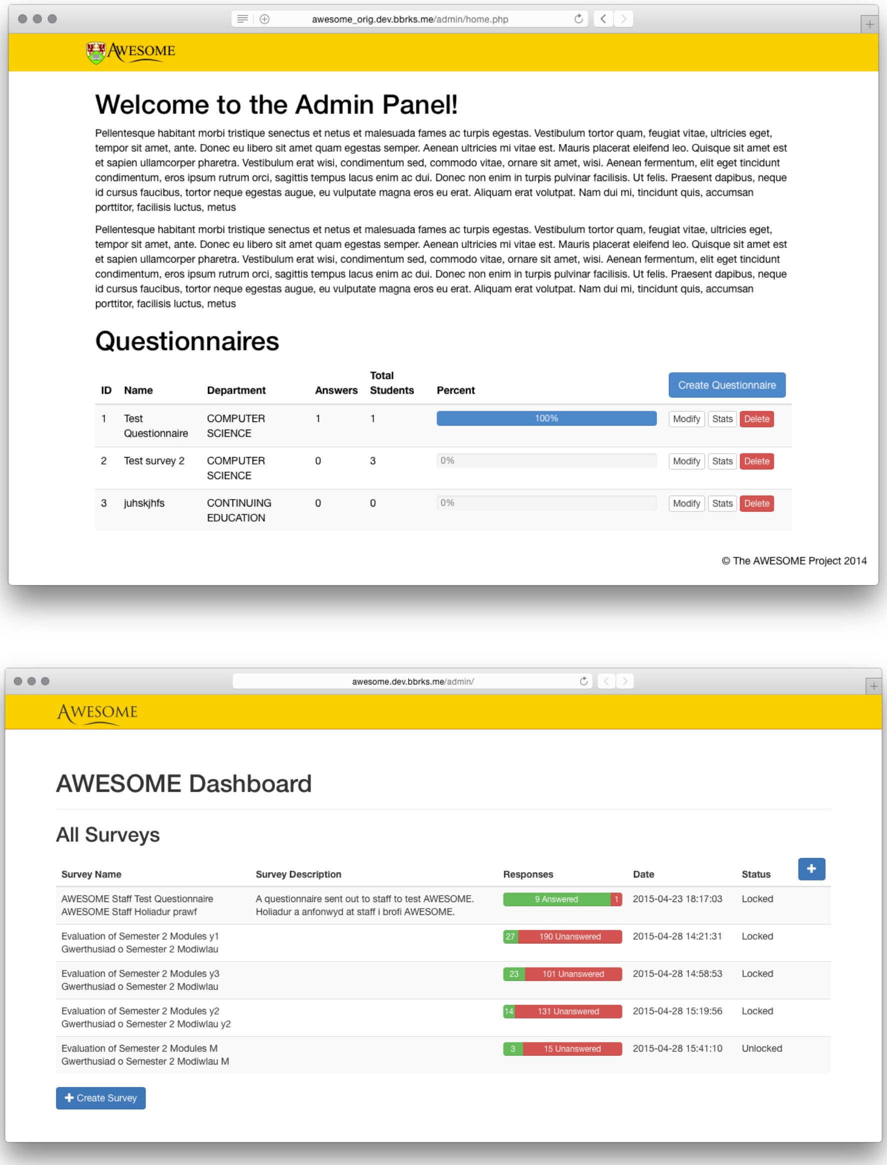
**I have learned a good deal from this module**

○ Strongly Disagree ○ Disagree ○ Neutral ○ Agree ○ Strongly Agree

**Please add any further comments on this module below**

**What one thing would you change to improve this module, and why?**

Figure 3.1.: A comparison of questionnaire pages between the prototype version and the submitted version of AWESOME



awesome_orig.dev.bbrks.me/admin/home.php

Welcome to the Admin Panel!

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante. Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo. Quisque sit amet est et sapien ullamcorper pharetra. Vestibulum erat wisi, condimentum sed, commodo vitae, ornare sit amet, wisi. Aenean fermentum, elit eget tincidunt condimentum, eros ipsum rutrum orci, sagittis tempus lacus enim ac dui. Donec non enim in turpis pulvinar facilisis. Ut felis. Praesent dapibus, neque id cursus faucibus, tortor neque egestas augue, eu vulputate magna eros eu erat. Aliquam erat volutpat. Nam dui mi, tincidunt quis, accumsan porttitor, facilisis luctus, metus

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Vestibulum tortor quam, feugiat vitae, ultricies eget, tempor sit amet, ante. Donec eu libero sit amet quam egestas semper. Aenean ultricies mi vitae est. Mauris placerat eleifend leo. Quisque sit amet est et sapien ullamcorper pharetra. Vestibulum erat wisi, condimentum sed, commodo vitae, ornare sit amet, wisi. Aenean fermentum, elit eget tincidunt condimentum, eros ipsum rutrum orci, sagittis tempus lacus enim ac dui. Donec non enim in turpis pulvinar facilisis. Ut felis. Praesent dapibus, neque id cursus faucibus, tortor neque egestas augue, eu vulputate magna eros eu erat. Aliquam erat volutpat. Nam dui mi, tincidunt quis, accumsan porttitor, facilisis luctus, metus

Questionnaires

| ID | Name | Department | Answers | Total Students | Percent | Create Questionnaire |
|---|---|---|---|---|---|---|
| 1 | Test Questionnaire | COMPUTER SCIENCE | 1 | 1 | 100% | Modify Stats Delete |
| 2 | Test survey 2 | COMPUTER SCIENCE | 0 | 3 | 0% | Modify Stats Delete |
| 3 | juhskjhfs | CONTINUING EDUCATION | 0 | 0 | 0% | Modify Stats Delete |

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awesome.dev.bbrks.me/admin/

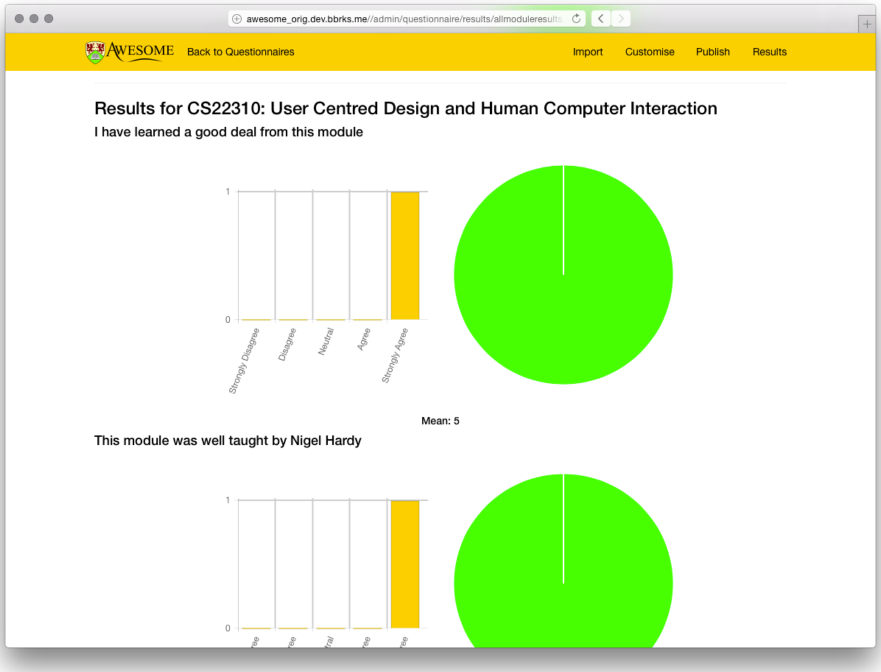
AWESOME Dashboard

All Surveys

| Survey Name | Survey Description | Responses | Date | Status | + |
|---|---|---|---|---|---|
| AWESOME Staff Test Questionnaire<br>AWESOME Staff Holiadur prawf | A questionnaire sent out to staff to test AWESOME.<br>Holiadur a anfonwyd at staff i brofi AWESOME. | 9 Answered 1 | 2015-04-23 18:17:03 | Locked | |
| Evaluation of Semester 2 Modules y1<br>Gwerthusiad o Semester 2 Modiwlau | | 27 190 Unanswered | 2015-04-28 14:21:31 | Locked | |
| Evaluation of Semester 2 Modules y3<br>Gwerthusiad o Semester 2 Modiwlau | | 23 101 Unanswered | 2015-04-28 14:58:53 | Locked | |
| Evaluation of Semester 2 Modules y2<br>Gwerthusiad o Semester 2 Modiwlau y2 | | 14 131 Unanswered | 2015-04-28 15:19:56 | Locked | |
| Evaluation of Semester 2 Modules M<br>Gwerthusiad o Semester 2 Modiwlau M | | 3 15 Unanswered | 2015-04-28 15:41:10 | Unlocked | |

+ Create Survey

Figure 3.2.: A comparison of surveys view between the prototype version and the submitted version of AWESOME

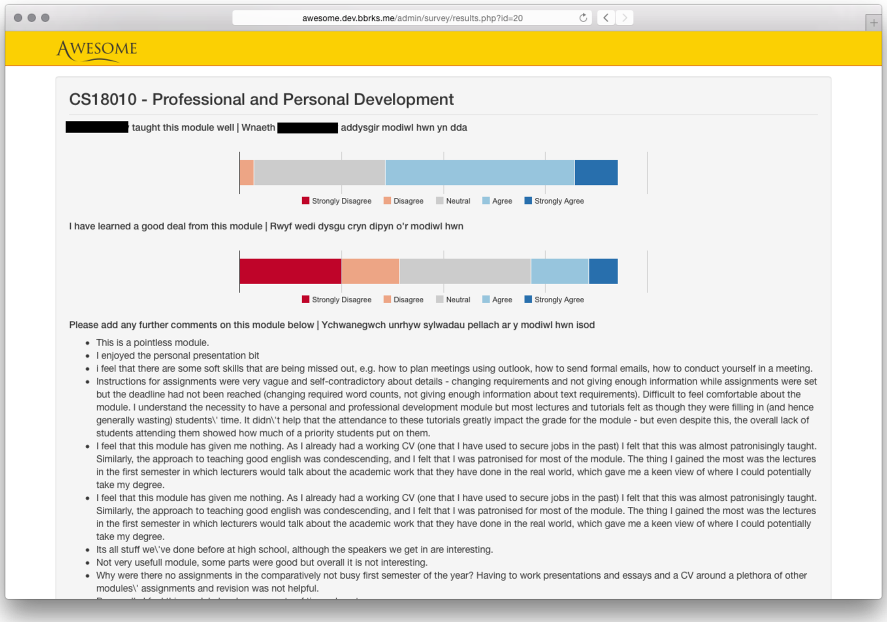


Results for CS22310: User Centred Design and Human Computer Interaction

I have learned a good deal from this module

Mean: 5

This module was well taught by Nigel Hardy



CS18010 - Professional and Personal Development

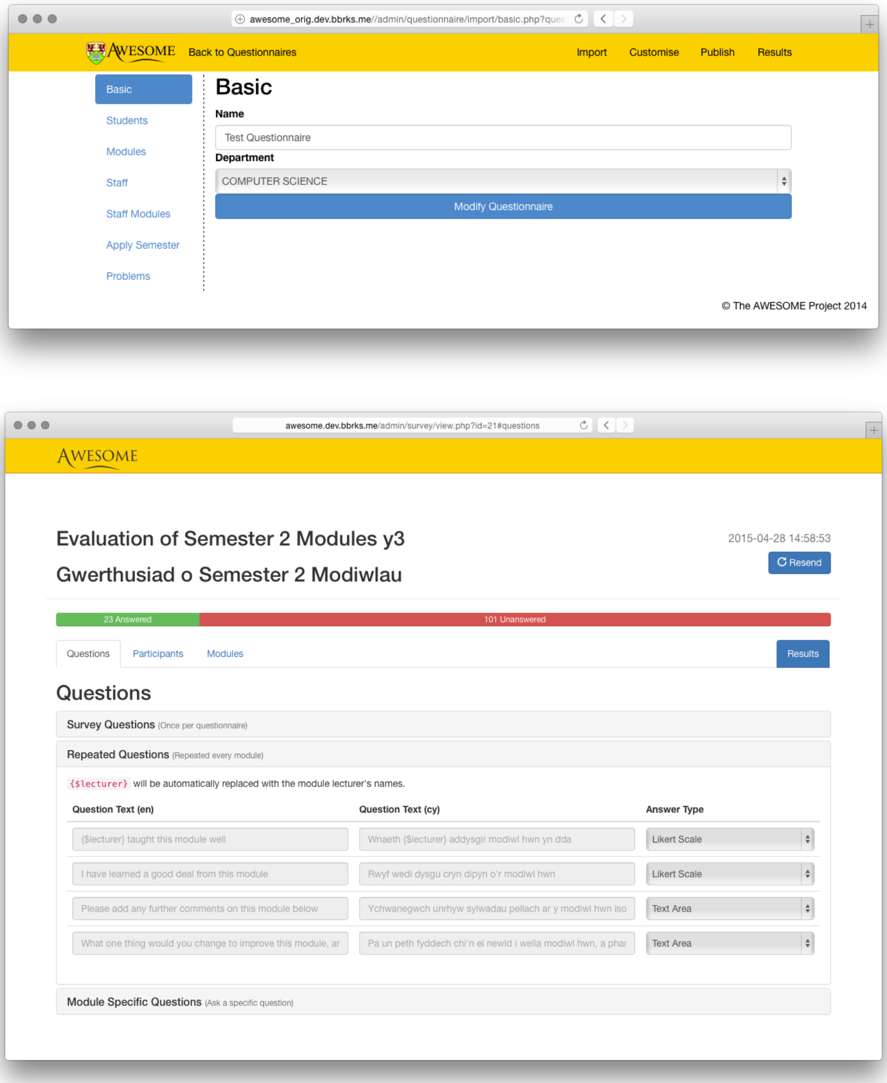
[redacted] taught this module well | Wnaeth [redacted] addysgir modiwl hwn yn dda

I have learned a good deal from this module | Rwyf wedi dysgu cryn dipyn o'r modiwl hwn

Please add any further comments on this module below | Ychwanegwch unrhyw sylwadau pellach ar y modiwl hwn isod

- This is a pointless module.
- I enjoyed the personal presentation bit
- i feel that there are some soft skills that are being missed out, e.g. how to plan meetings using outlook, how to send formal emails, how to conduct yourself in a meeting.
- Instructions for assignments were very vague and self-contradictory about details - changing requirements and not giving enough information while assignments were set but the deadline had not been reached (changing required word counts, not giving enough information about text requirements). Difficult to feel comfortable about the module. I understand the necessity to have a personal and professional development module but most lectures and tutorials felt as though they were filling in (and hence generally wasting) students\' time. It didn\'t help that the attendance to these tutorials greatly impact the grade for the module - but even despite this, the overall lack of students attending them showed how much of a priority students put on them.
- I feel that this module has given me nothing. As I already had a working CV (one that I have used to secure jobs in the past) I felt that this was almost patronisingly taught. Similarly, the approach to teaching good english was condescending, and I felt that I was patronised for most of the module. The thing I gained the most was the lectures in the first semester in which lecturers would talk about the academic work that they have done in the real world, which gave me a keen view of where I could potentially take my degree.
- I feel that this module has given me nothing. As I already had a working CV (one that I have used to secure jobs in the past) I felt that this was almost patronisingly taught. Similarly, the approach to teaching good english was condescending, and I felt that I was patronised for most of the module. The thing I gained the most was the lectures in the first semester in which lecturers would talk about the academic work that they have done in the real world, which gave me a keen view of where I could potentially take my degree.
- Its all stuff we\'ve done before at high school, although the speakers we get in are interesting.
- Not very usefull module, some parts were good but overall it is not interesting.
- Why were there no assignments in the comparatively not busy first semester of the year? Having to work presentations and essays and a CV around a plethora of other modules\' assignments and revision was not helpful.

Figure 3.3.: A comparison of results between the prototype version and the submitted version of AWESOME



Basic

Name: Test Questionnaire

Department: COMPUTER SCIENCE

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Evaluation of Semester 2 Modules y3

Gwerthusiad o Semester 2 Modiwlau

2015-04-28 14:58:53

23 Answered 101 Unanswered

Questions

Survey Questions (Once per questionnaire)

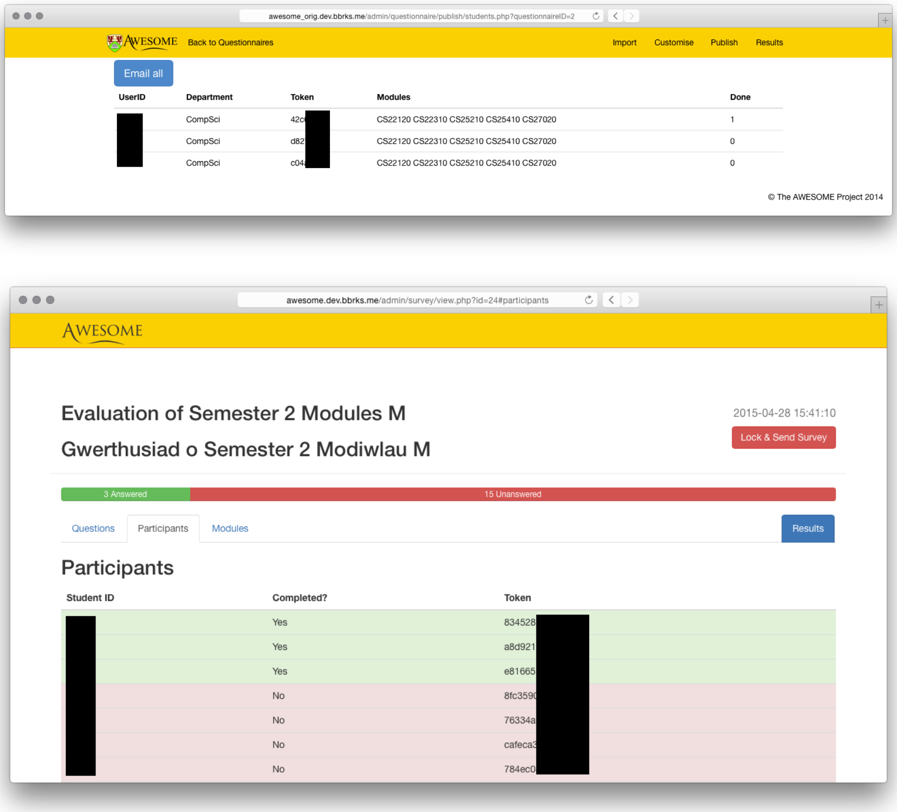
Repeated Questions (Repeated every module)

{$lecturer} will be automatically replaced with the module lecturer's names.

| Question Text (en) | Question Text (cy) | Answer Type |
|---|---|---|
| {$lecturer} taught this module well | Wnaeth {$lecturer} addysgir modiwl hwn yn dda | Likert Scale |
| I have learned a good deal from this module | Rwyf wedi dysgu cryn dipyn o'r modiwl hwn | Likert Scale |
| Please add any further comments on this module below | Ychwanegwch unrhyw sylwadau pellach ar y modiwl hwn iso | Text Area |
| What one thing would you change to improve this module, ar | Pa un peth fyddech chi'n ei newid i wella modiwl hwn, a phar | Text Area |

Module Specific Questions (Ask a specific question)

Figure 3.4.: A comparison of survey view between the prototype version and the submitted version of AWESOME


awesome_orig.dev.bbrks.me/admin/questionnaire/publish/students.php?questionnaireID=2
AWESOME
Back to Questionnaires
Import
Customise
Publish
Results
Email all

| UserID | Department | Token | Modules | Done |
|---|---|---|---|---|
| [redacted] | CompSci | 42c[redacted] | CS22120 CS22310 CS25210 CS25410 CS27020 | 1 |
| [redacted] | CompSci | d82[redacted] | CS22120 CS22310 CS25210 CS25410 CS27020 | 0 |
| [redacted] | CompSci | c04[redacted] | CS22120 CS22310 CS25210 CS25410 CS27020 | 0 |

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awesome.dev.bbrks.me/admin/survey/view.php?id=24#participants
AWESOME

Evaluation of Semester 2 Modules M

Gwerthusiad o Semester 2 Modiwlau M

2015-04-28 15:41:10

Participants

| Student ID | Completed? | Token |
|---|---|---|
| [redacted] | Yes | 834528[redacted] |
| [redacted] | Yes | a8d921[redacted] |
| [redacted] | Yes | e81665[redacted] |
| [redacted] | No | 8fc359[redacted] |
| [redacted] | No | 76334a[redacted] |
| [redacted] | No | cafeca3[redacted] |
| [redacted] | No | 784ec0[redacted] |

Figure 3.5.: A comparison of respondents between the prototype version and the submitted version of AWESOME

# 4. Implementation

## 4.1. Implementation

# 5. Testing

## 5.1. Automated Testing

For this project, a Continous Integration (CI) platform was chosen to be used in order to facilitate automated unit tests. By using CI ensured that every time code was committed with unit tests, the suite was ran and results were instantly available. Any test failures resulted in a notification email being sent to identify when and where a problem had occurred.

After seeing fellow classmates use TravisCI[1] on previous projects, and reviewing the features it provides, I decided to utilise it in this project. Travis offered testing across multiple PHP versions, which proved helpful when trying to provision a server on the university network.

This was indispensable mid-way through the project, when functionality in the i18n framework needed to be changed and tests started to fail. I wouldn't have noticed any errors when manually testing, but the unit tests brought up edge cases which were then dealt with.

## 5.2. User Testing

User testing was carried out by creating a survey and entering volunteer's AU usernames in the student CSV data along with sample modules. The first real test through the AU servers was sent to staff. This uncovered many issues with the setup of AWESOME on the AU server, which took some time to fix. After these issues were resolved, an end-of-semester questionnaire was sent out to the vast majority of students in the Computer Science department. From first years, to masters students.

User testing revealed some useful information via the feedback form, as well as through a question in the survey which was asked about how easy AWESOME was to use.

[1] TravisCI Homepage: http://travis-ci.com

## 5.3. Acceptance Testing

Acceptance testing was carried out on the submitted version of AWESOME and results in test tables can be found in Appendix A with 16/18 (89%) of tests passing. More detail of the two failing tests can be found in the appendix entry.

# 6. Evaluation

## 6.1. Process

## 6.2. Development Environment

## 6.3. Project Stages

## 6.4. Blog

## 6.5. Degree

## 6.6. Upper Management

## 6.7. Time Management

## 6.8. Future Scope

# Bibliography

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# A. Test Tables

These tests were carried out as part of acceptance testing using the submitted version of AWESOME. Results are listed below.

- Test D8 fails as there is currently no safeguard in place for incorrect CSV format.
- Test D12 fails as questionnaire respondent tokens aren't created until the moment of sending.

Both of these issues a quick fixes, but are unable to be implemented in time for the dissertation hand-in. They will be fixed in a future version.

| ID | Requirement | Input | Expected Output | Actual Output | Pass |
|---|---|---|---|---|---|
| D1 | Admin Dashboard sits behind a login | Go to `awesome.url/admin` | Login form pops up | Login form pops up | ✓ |
| D2 | Admin Dashboard login accepts correct username and password | Enter correct credentials into login form | Redirected to admin dashboard | Redirected to admin dashboard | ✓ |
| D3 | Admin Dashboard login refuses incorrect username | Enter incorrect username and correct password | Login fails | Login Fails | ✓ |
| D4 | Admin Dashboard login refuses incorrect password | Enter correct username and incorrect password | Login fails | Login Fails | ✓ |
| D5 | Create Survey button starts the creation of survey wizard | Click 'Create Survey' button | Taken to screen asking for titles, description and CSV data | Taken to screen asking for titles, description and CSV data | ✓ |
| D6 | Survey must have a title | Enter no title and press 'create' button | Message pops up disallowing action | Message pops up disallowing action | ✓ |
| D7 | Survey must have CSV data | Enter no CSV data and press 'create' button | Message pops up disallowing action | Message pops up disallowing action | ✓ |
| D8 | Must check CSV data for formatting issues | Enter incorrect CSV data and press 'create' button | Message pops up informing of CSV formatting error | Taken to survey page without any errors | ✗ |
| D9 | Unlocked survey page allows entry of question text and type | Type a question title and select an answer type for a question | Able to enter text in question text and select an answer type | Able to enter text in question text and select an answer type | ✓ |
| D10 | Able to add a new question | Click add question button | A new question text and answer type row appears | A new question text and answer type row appears | ✓ |
| D11 | Able to delete an existing question | Click the delete question button next to a question | The question is removed and deleted on save | The question is removed and deleted on save | ✓ |
| D12 | Be able view participants in a survey before sending | Click 'Participants' tab in a survey page | Respondents should be listed | Respondent list is empty | ✗ |
| D13 | Be able to send a survey | Click the 'Send' button in a survey page | A message displaying how many people the survey was sent to | A message displaying how many people the survey was sent to | ✓ |

Table A.1.: Acceptance testing table of AWESOME's Admin Dashboard

| ID | Requirement | Input | Expected Output | Actual Output | Pass |
|---|---|---|---|---|---|
| Q1 | Students receive an email with a link to personalised questionnaire | Check email inbox | See an email with unique link | See an email with unique link | ✓ |
| Q2 | Questionnaire can be viewed correctly | Click link in email | See questionnaire displayed | See questionnaire displayed | ✓ |
| Q3 | Answers can be selected or filled in | Click on a Likert rating or type in a text box | See answer selected or text typed in | See answer selected or text typed in | ✓ |
| Q4 | Answers can be submitted | Select or type some answers and press the send button | Page redirected with a message informing of completion | Page redirected with a message informing of completion | ✓ |
| Q5 | Questionnaire can't be completed twice | Re-visit the unique link and try to complete the survey again | Receive an error message informing that the questionnaire has already been completed | Receive an error message informing that the questionnaire has already been completed | ✓ |

Table A.2.: Acceptance testing of AWESOME's Questionnaire