# CMP - Automating Module Feedback Internship Project

## User Guide

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## Introduction

The Automating Module Feedback Internship Project was researched and designed by 3rd Year Computing Sciences student Adam Biggs for Project Managers Ben Milner and Jason Lines. The project uses Microsoft’s Power Automate to generate surveys, using Office Scripts, and email them students in a school.

## Project Aims Completed

The project had several design criteria each of which were discussed in the Agile Sprint meetings once each week. The system has been designed to be as automated as possible, requiring minimal admin input.

## System

An overview of the system is detailed below. In addition a link to the full walkthrough video has been provided: [How To Video](https://ueanorwich.sharepoint.com/:v:/r/sites/CMP-AutomatingModuleFeedbackInternshipProject/Shared%20Documents/Module%20Survey%20Evaluation%20Internship/Module%20Survey%20Evaluation%20Internship.mp4?csf=1&web=1&e=MYGLCL).

### System Overview

The Automating Module Feedback Internship Project has been written using Power Automate Flows, Microsoft’s Excel and Microsoft’s Excel Office Scripts – written using Typescript – and uses SharePoint as data storage. The system has been designed around five Flows which perform all the tasks required, as below:

* Validate and preview generated surveys before they are sent out.
* Email links to the generated surveys to students.
* Allow students to fill out the surveys.
* Capture the students results, automatically adding them to an Excel Spreadsheet.
* Automatically Create a report Excel Spreadsheet and email this to the correct Module Organiser.

### System Requirements

To accomplish the above tasks, the system has several requirements to run correctly. Many of these requirements can be seen in the [How To Video](https://ueanorwich.sharepoint.com/:v:/r/sites/CMP-AutomatingModuleFeedbackInternshipProject/Shared%20Documents/Module%20Survey%20Evaluation%20Internship/Module%20Survey%20Evaluation%20Internship.mp4?csf=1&web=1&e=MYGLCL).

#### SharePoint File Structure

The SharePoint file structure must be created under specific guidelines for the system to run correctly. At minimum, the SharePoint ‘CMP – Automating Module Feedback Internship Project’ root Documents folder must contain:

* A **Data** folder
* Within the Data folder, an **Input** folder
* Within the Input folder, an academic year folder in the form **YYYY-YYYY**.
* Within the academic year folder, an Excel Spreadsheet named **Student Emails.xlsx** and a HyperText Markup Language (HTML) file named **emailToStudentsTemplate.html**
* Also within the academic year folder, a school acronym folder in the form **ABC**
* Within the school acronym folder an Excel Spreadsheet named   
  **(ABC) Survey Specification.xlsx**

For example, for the school of Computing Sciences in the academic year 2021 to 2022 the three files will have the following paths:

*Documents/Data/Input/2021-2022/Student Emails.xlsx*

*Documents/Data/Input/2021-2022/emailToStudentsTemplate.html*

*Documents/Data/Input/2021-2022/CMP/(CMP) Survey Specification.xlsx*

N.B. the results folder and contents will automatically be generated by the Power Automate Flows. It can therefore be deleted if you want to perform a fresh run.

#### Input File Contents

Below are the examples of the above input documents which were used in testing.

##### Student Emails.xlsx

|  |  |  |
| --- | --- | --- |
| **ModuleId** | **StudentEmail** |  |
| CMP-6006A | [cmp-6006a@uea.ac.uk](mailto:cmp-6006a@uea.ac.uk) |  |
| CMP-6002B | [pzv17sbu@uea.ac.uk](mailto:pzv17sbu@uea.ac.uk) |  |
|  |  |  |

##### emailToStudentsTemplate.html

N.B. The @SurveyLink@ is replaced by the generated URL link to the survey by the Power Automate Flow 1.

<p>Dear All,<br>

<br>

As it is now the end of the semester, we invite you to complete feedback on the modules that you have just taken. It is important to the School to receive feedback on the things that have worked well and those that have not gone well so that we can use this information to make improvements next year. I hope you will be able to find a few minutes to complete these surveys.<br>

<br>

The link to provide this feedback is: <a href="@SurveyLink@">Click here</a><br>

<br>

<br>

Many thanks,<br>

<br>

Very Fake Name<br>

</p>

##### Survey Specification.xlsx

This Excel Spreadsheet file contains three sheets which must exist in the forms given below.

N.B. The only survey type definitions are **Likert**, **Text**, **Likert-Person** and **Text-Person**. These inputs into the SurveyType columns of the Mid Module Specification or End Module Specification change the type of questions that will be asked in the generated surveys. The set of Person questions must be last otherwise questions may be ignored. Examples are given in relation to the table below:

|  |  |
| --- | --- |
| **SurveyType** | **End of Semester Feedback** |
| Likert | I found the module to be intellectually stimulating |
| Text | Please give any further comments on the module, particularly if you have 'disagreed' with any of the statements above or if there was good practice that you would like to highlight. |
| Likert-Person | The lecturer was good at explaining things |
| Text-Person | Please give any further comments on this lecturer, particularly if you have 'disagreed' with any of the statements above or if there was good practice that you would like to highlight. |

|  |  |  |
| --- | --- | --- |
| SurveyType | Output | Example |
| **Likert** | A Likert scale from Strongly Disagree (1) to Strongly Agree (5) for the given question. |  |
| **Text** | A textbox input for free text for the given question. |  |
| **Likert-Person** | A Likert scale from Strongly Disagree (1) to Strongly Agree (5) for the given question, specified for each of the staff members in Module Criteria. |  |
| **Text-Person** | A textbox input for free text for the staff members for a given question. |  |

###### Module Criteria (Sheet 1)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ModuleId** | **ModuleName** | **ModuleOrganiserEmail** | **Staff1** | **Staff2** | **Staff3** | **Staff4** | **Staff5** |  |
| CMP-6002B | Machine Learning | [pzv17sbu@uea.ac.uk](mailto:pzv17sbu@uea.ac.uk) | Leon Kennedy | Tim Minchin | Bo Burnham | Tom Lehrer | Jimmy Carr |  |
| CMP-6006A | Graphics 2 | [pzv17sbu@uea.ac.uk](mailto:pzv17sbu@uea.ac.uk) | Patrick Star | Bo Burnham | Jimmy Carr |  |  |  |
|  |  |  |  |  |  |  |  |  |

###### Mid Module Specification (Sheet 2)

|  |  |  |
| --- | --- | --- |
| **SurveyType** | **Mid Semester Feedback** |  |
| Likert | I find the lectures useful for learning the material |  |
| Likert | I find the labs /seminars useful for learning the material |  |
| Likert | I think the module is well organised and runs smoothly |  |
| Likert | Overall, I am satisfied with the quality of this module |  |
| Text | Do you have any comments on this module overall, this includes things you feel have gone well or poorly. Is there anything you feel can be improved |  |
|  |  |  |

###### End Module Specification (Sheet 3)

|  |  |  |
| --- | --- | --- |
| **SurveyType** | **End of Semester Feedback** |  |
| Likert | I found the module to be intellectually stimulating |  |
| Likert | I felt this module challenged me to achieve my best work |  |
| Likert | I think this module was well organised and ran smoothly |  |
| Likert | The criteria used during marking was clear in advance |  |
| Likert | I felt that the marking and assessment was fair |  |
| Likert | Feedback on my work was timely |  |
| Likert | I was able to contact staff when I needed to |  |
| Likert | Any changes in the module or teaching was communicated effectively |  |
| Text | Please give any further comments on the module, particularly if you have 'disagreed' with any of the statements above or if there was good practice that you would like to highlight. |  |
| Likert-Person | The lecturer was good at explaining things |  |
| Likert-Person | The lecturer made the subject interesting |  |
| Likert-Person | The lecturer responded well to academic needs at an individual and/or group level |  |
| Text-Person | Please give any further comments on this lecturer, particularly if you have 'disagreed' with any of the statements above or if there was good practice that you would like to highlight. |  |
|  |  |  |

### Power Automate Overview

The system uses five flows to work. Three of these follows (0., 1. & 4.) are manual flows which must be run by the admin. The remaining two flows (2. & 3.) are automated flows which operate automatically when the triggering event occurs – in both cases when a URL is clicked. For the descriptions below the Computing Sciences in the academic year 2021 to 2022 has been used. The module Graphics 2 (CMP-6006A) has been used for the Mid Semester.

|  |  |  |  |
| --- | --- | --- | --- |
| Flow Name | Description | Input | Output |
| 0. Validate and Preview Survey | Validates the contents of **Student Emails.xlsx** and  **(CMP) Survey Specification.xlsx**.  Generates a HTML survey file for both Mid-term and End of Term surveys. These two files are stored in the Survey Specification folder: *Documents/Data/Input/2021-2022/CMP/…* | previewModuleId – A Module Id in the form ‘ABC-1234Z’:  ‘**CMP-6006A**’.  previewAcademicYear – An academic year in the form ‘YYYY-YYYY’: ‘**2021-2022**’ | If the flow succeeds, the two excel files are correct.  ‘**Mid Module Survey Preview.html**’ &  ‘**End Module Survey Preview.html**’ |
| 1. New: Excel to Emails | Sends emails, with URL links to the surveys, to each student in **Student Emails.xlsx** | SurveyType – A dropdown selection of either Mid or End [1]:  ‘**Mid**’ AcademicYear – in the form ‘YYYY-YYYY’: ‘**2021-2022**’ | An email sent to each student with a link to the survey. |
| 2. New: Form to Student | When a student opens the URL link the HTTP request triggers this flow (GET) and the survey is automatically generated and loaded:  The survey is generated from data contained within **(CMP) Survey Specification.xlsx** for the survey type and academic year specified in *1. New: Excel to Emails*. The **CMP6006A.xlsx** file is generated – if it does not already exist – in the results folder. path: *Documents/Data/Results/2021-2022/CMP/Mid/CMP6006A.xlsx* |  | Creates the  ‘**CMP-6006A.xlsx**’ file if it doesn’t already exist.  Creates the survey temporarily for the student. |
| 3. New: HTTP Post to Excel | When the student clicks submit on the survey a HTTP request triggers this flow (POST) the student’s survey data is processed and added to **CMP6006A.xlsx** as a new row.  The student’s browser loads a “thank you for submitting” page. |  | Enters a new row in the ‘**CMP-6006A.xlsx**’ file.  Creates a “Thank you” page temporarily for the student. |
| 4. New: Excel to Reports Test | Generates a report as two new sheets in the **CMP6006A.xlsx** (and any other document in the folder).  Email each updated file to that modules Module Organiser recorded in **(CMP) Survey Specification.xlsx** | resultsPath – A path to the folder to create reports for in the form  ‘YYYY-YYYY/ABC/Mid’ or  ‘YYYY-YYYY/ABC/End’:  ‘**2021-2022/CMP/Mid**’ | Updates the  ‘**CMP-6006A.xlsx**’ file with the Report and Graph sheets.  An email sent the Module Organiser with the file attached. |

### Developer Notes

[1] – It was decided that the determination of the semester based on the final character of the module code would be too unpredictable to automate. This was similar to the determination of the academic year based solely on the date, which yields unpredictable answers. It is currently up to the admin to correctly add mid, end or full year modules to the Survey Specification as there were too many inconsistences automatically determining which type they were based solely on dates and ‘A’, ’B’ and ’Y’.

SharePoint sometimes requires a refresh to show the newly created or updated folders. For example, on one occasion two results folders existed replacing the input folder. On a refresh they became the results and input folders as they should be.

Staff questions in either survey specifications must be after all the general questions.

## Future Work

* The creation of a HTML landing page for the admin user which can then serve specialised HTML forms which when submitted can run each of the Power Automate Flows via POST.
* The combination of student email addresses such that all addresses for the same module id can be emailed together.

