



## Swinburne University of Technology

School of Science, Computing and Engineering Technologies

### COS10026 Computing Technology Inquiry Project

Assignment Part 2, Semester 2, 2023

Server-Side Programming

#### Important Information

<b>Due Date</b>	<b>10 pm on Monday in Week 13</b> (Late submission penalty: 10% of total available marks per day)
<b>Submission Method</b>	<b>Canvas + Mercury</b>
Contribution to Final Assessment	50%

#### Purpose of the assignment

In this part of the assignment you will further enhance the Web site you developed in Parts

1. You will:

- Extend the functionality of the Web site by creating server-side PHP scripts to process job application data sent from the Web forms you created in the previous parts of the assignment.
- Create simple MySQL tables for storing, updating and retrieving information from a Web site.
- Create a Web page that allows the Human Resources (HR) manager at the company to view, update and delete applications.

There will be an opportunity to enhance your website beyond the basic requirements.

#### A: Specified Requirements

*Use only mysql commands in this assignment.*

##### 1. Use PHP to reuse common elements in your Web site

PHP provides us with techniques to modularise and reuse our web application code. Rewrite your web pages so that the common static HTML elements such a menu, header and footer are written in common text files that are then “included” back into your web pages. Name the include file(s) with a .inc extension, replace the sections of HTML in your main pages with ‘include’ statements, and rename your main pages with a .php extension, so the php includes will be included.

##### 2. Create a file to store your database connection variables “settings.php”

As you have done in the labs use a PHP include file “**settings.php**” that contains the host, user, password and database name connection variables, and use this in your PHP to connect to your MySQL database on the feenix-mariadb database server.

### 3. Create an **EOI** table (expressions of interest)

Create a table `eo_i` in your MySQL database. The information in each attempt record should include the following:

- **EOI**number (auto-generated id)
- Job Reference number
- First name
- Last name
- Address:
  - Street address
  - Suburb/town ◦
  - State ◦ Postcode
- Email address
- Phone number
- Skills (Note: the data here will depend on your job description. Although there are better ways to design this, you could just have a number of generic fields called skill1, skill2, ... etc.)
- Other skills. Text description

In addition to the above information, each record should have a **Status** field. The values in this field can be **New**, **Current** or **Final**. When an EOI record is first created the **Status** is set to **New**.

### 4. Adding validated records to the **EOI** table (processEOI.php)

Use (or adapt) the application form you developed in Assignment Part 1 so that the form data is sent to a PHP script (`processEOI.php`) that *adds* an EOI record to the table. When the database has accepted the expression of interest from the form, a Web page should display a confirmation message with the unique auto-generated **EOI**number to the user.

When a user submits an EOI, if an EOI table does not already exist in your database the table should be programmatically created by your code. The “processEOI.php” page, should not be able to be accessed directly by url through a browser. *Hint: check what data has been set and redirect.*

*While you will have done client-side validation in Parts 1, in order to preserve the integrity of the server data you should also implement server-side data format checking.*

Check the integrity of the data input by the users. All data should be sanitized to remove leading and trailing spaces, backslashes and HTML control characters. No required fields should be empty. If the data does not validate an appropriate user-friendly error page should be displayed to the user.

Field	Format requirement
Job reference number	exactly 5 alphanumeric characters
First name	max 20 alpha characters
Last name	max 20 alpha characters
Date of birth	dd/mm/yyyy between 15 and 80
Gender	Selected
Street Address	max 40 characters
Suburb/town	max 40 characters

State	One of VIC,NSW,QLD,NT,WA,SA,TAS,ACT
Postcode	exactly 4 digits – matches state
Email address	validate format
Phone number	8 to 12 digits, or spaces
Other skills	not empty if check box selected

So we can test that server-side validation works correctly, we need to disable client-side HTML5 data checking.

Place the `novalidate="novalidate"` attribute into your forms.

## 5. HR manager queries (manage.php)

Create a web page **manage.php** that allows a manager to make the following queries of the **eoi** table and returns a web page with the appropriate results.

- List all EOIs.
- List all EOIs for a particular position (given a job reference number).
- List all EOIs for a particular applicant given their first name, last name or both.
- Delete all EOIs with a specified job reference number
- Change the Status of an EOI.

## B: Enhancements

**You should complete the Specified Requirements before you attempt this part. See the marking Guide below.**

Marks will be allocated to enhancements of your choice that go beyond the specified requirements. In this assignment we will consider PHP and MySQL enhancements. You are encouraged to be creative in thinking up possible enhancements.

**Examples** of PHP / MySQL enhancements you might make that will contribute a higher mark include:

- Store job descriptions in a database table and have the HTML dynamically created by PHP.
- Normalise the structure of the dataset by, for example, creating a primary-foreign key link between the **eoi** and **job\_description** tables; **job\_description** and **skills**, etc. Ensure that integrity of the database is preserved, for example an EOI cannot be created if the job reference number does not exist in the **job\_description** table.
- Provide the manager with the ability to select the field on which to sort the order in which the EOI records are displayed.
- Create a manager registration page with server side validation requiring unique username and a password rule, and store this information in a table. Control access to **manage.html** by checking username and password. Have access to the web site disabled for user a period of time on, say, three or more invalid login attempts.
- Create a log out page with a link from the **manage** web page. Ensure the manager's web site cannot be entered directly using a URL after logging out.

- One or more enhancements of your own devising. If you plan such enhancements it would be worthwhile checking with your tutor first to ensure they are appropriate and non-trivial.

A maximum of 2 extensions will be assessed. *Up to* 10 marks will be given per **documented** enhancement type. The filename of this page will be **phpenhancements.html** (or **phpenhancements.php** if it includes PHP script).

## Web Site Folder Structure and Deployment Requirements

Create a website structured as specified in the previous assignments.

Your website folder structure should follow the structure below. All files should be under a folder /assign2.

<b>Assign2/</b>	<i>You must have this folder – case sensitive!</i>
index.php	
jobs.php    apply.php	
about.php	
enhancements.php	
enhancements2.php	
phpenhancements.php	
header.inc    menu.inc	
footer.inc	
settings.php	
<i>..other php function and include pages</i>	
processEOI.php    manage.php <i>..other php pages</i>	
images/	<i>Folder for images for your page content</i>
styles/	<i>Folder for style.css other css files</i>
styles/images/	<i>Folder for images referred to by your css files e.g. background</i>

**Note:** All links to your files should be **relative**. *Do not use absolute links*, as these links will probably be broken when files are transferred for marking. No marks will be allocated if links are broken.

## Individual Report (Individual Task)

The individual report is an individual task. Your report must be professionally written (**within 1800 words**). Table 1 presents the suggested structure for the report and some sample content for each section of the report.

**Table 1. Components of Report and Requirements**

Component	Content
<b>Cover Page</b>	<ul style="list-style-type: none"><li>• Report title</li><li>• Your name</li><li>• Student ID</li></ul>
<b>Introduction</b>	<ul style="list-style-type: none"><li>• Objective of the report</li><li>• Outline of the report's structure</li></ul>
<b>The Website</b>	<ul style="list-style-type: none"><li>• Website introduction</li><li>• Main functionalities of the website, including screenshots</li><li>• Technical details on the web site development</li><li>• Highlight the key / innovative features of the website</li></ul>
<b>Security of the website</b>	<ul style="list-style-type: none"><li>• You need to research ways to improve the security of websites</li><li>• You need to point out to places in your code/website code that the above tips can be or has been implemented</li></ul>
<b>Your Contribution</b>	<ul style="list-style-type: none"><li>• List and discuss your main contributions</li></ul>
<b>Reflection and Discussion</b>	<ul style="list-style-type: none"><li>• Reflections on your experience regarding professional purpose, teamwork and effective communication in this project</li><li>• Discussions on <b>one</b> of the following web development related issues: privacy, security, environmental sustainability, commercial or social issues. For example, in this project or in a similar future project, how did/will you consider the privacy, security, environmental sustainability, commercial or social issues?</li></ul>
<b>Conclusion</b>	<ul style="list-style-type: none"><li>• Summary of the report</li></ul>
<b>References</b>	<ul style="list-style-type: none"><li>• (Optional) List of reference materials if used</li></ul>
<b>Appendix</b>	<ul style="list-style-type: none"><li>• (Optional) Information that supports but is not essential to the report</li></ul>

## Short Video (Team Task)

Create a short video to introduce and demonstrate your web application.

- Upload your video to youtube
- Create a hyper link in the index.html page of your website, link it to your youtube video
- Every team member must present in the demonstration video for a similar amount of time
- The total length of the video should be between 4 to 5 minutes.

## Assignment Submission (Mercury + Canvas)

### Deliverables

The marks are allocated 50% for team task and 50% for individual task in this assignment.

- The web application (team task)
- The short video (team task)
- Project report (individual task)

### Submission (Canvas + Mercury)

Your website should be uploaded to Mercury on or before your deadline.

An electronic copy of your assignment should be submitted through Canvas on or before your deadline.

- Make sure all your website files are in the correct folders and compress your root folder with all your sub-folders with HTML, CSS, PHP and images into a zip file named "assign2.zip". Submit this to Canvas. When the zip file is decompressed, the entire website should be able to be run from index.html without needing to move any files.
- You don't need to submit the demonstration Youtube video. You only need to include a hyperlink in the index.html page pointing to your Youtube video.
- Only the team leader needs to submit the assignment zip file.
- Every student needs to submit their individual project report to Canvas.
- Every student needs to submit their peer evaluation form to Canvas.
- You can submit more than once through Canvas. Your last submission will be marked.
- Note that all deliverables must be submitted electronically.

**Make sure you complete your Canvas submission process.**

## Website Requirements Checklist

Requirement	
HTML Menus created and other common elements from PHP includes	
EOI table - schema can store the necessary information	
<b>processEOI.php</b> - records added from Web site <input type="checkbox"/> - table automatically created if does not exist when accessed <input type="checkbox"/> - status added = New <input type="checkbox"/> - EOI number programmatically generated <input type="checkbox"/> - Redirect if tried to access directly via URL <input type="checkbox"/>	
<b>data sanitised and formats checked at server</b> JobRefNo <input type="checkbox"/> ; Name <input type="checkbox"/> ; Age format <input type="checkbox"/> ; Age range <input type="checkbox"/> ; Address/suburb <input type="checkbox"/> ; State <input type="checkbox"/> ; Pcode <input type="checkbox"/> ; State-pcd match <input type="checkbox"/> ; Email <input type="checkbox"/> ; Phone <input type="checkbox"/> ; Other skills not empty if checked <input type="checkbox"/>	
<b>manage.php</b> - HTML well presented <input type="checkbox"/> - List all EOIs <input type="checkbox"/> - List all EOIs for a particular position (given Ref num) <input type="checkbox"/> - List all EOIs for a particular applicant given firstname, lastname or both <input type="checkbox"/> - Change the status an EOI for a particular applicant <input type="checkbox"/> - Delete all EOIs with a specified job reference number <input type="checkbox"/>	

## Other Deductions

Requirement	
<b>PHP and HTML</b>	
- Invalid HTML	
- Meta-data does not follows in-house standard	
- Html has Style information embedded	
- HTML form elements do not follow in-house standard	
- Deprecated elements/attributes used	
- Comments inadequate	
- Lack of appropriate header comments as per in-house standard	
- Lack of appropriate Line comments	
- Uses other than mysqli commands	
<b>Web site</b>	
- Directory Structure not as specified, absolute links	
- Third party content inadequately acknowledged	
- Other deductions (no progress check)	
Failure to acknowledge third party code or content at all is plagiarism and may result in zero marks for this assessment, or other penalties in accord with Swinburne policy.	

Total Code Deductions	
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**Warning: All code is automatically checked for similarities to other submissions. Do not use *any* code from other students and make sure other 3<sup>rd</sup> party code is properly acknowledged and hyperlinked from comments within your source code.**



## Website Marking Rubric

	5 marks	4 marks	3 marks	2 marks	0 - 1 marks
<b>PHP include and table structure (5 marks)</b>	The requirements are implemented with high quality and follow the inhouse standard.	Most of the requirements are implemented and follow the in-house standard.	Some requirements are not implemented correctly or not follow the in-house standard.	Limited requirements are implemented.	No or very limited requirements are implemented.
<b>Process page (20 marks)</b>	17 - 20 marks The requirements are implemented with high quality and follow the inhouse standard.	13 - 16 marks Most of the requirements are implemented and follow the in-house standard.	9 - 12 marks Some requirements are not implemented correctly or not follow the in-house standard.	5 - 8 marks Limited requirements are implemented.	0 - 4 marks No or very limited requirements are implemented.
<b>Manage page (10 marks)</b>	9 - 10 marks The requirements are implemented with high quality and follow the inhouse standard.	7 - 8 marks Most of the requirements are implemented and follow the in-house standard.	5 - 6 marks Some requirements are not implemented correctly or not follow the in-house standard.	3 - 4 marks Limited requirements are implemented.	0 - 2 marks No or very limited requirements are implemented.
<b>Enhancement (10 marks)</b>	9 - 10 marks Excellent enhancement. It enhances the functionality of the website. It is technically advanced.	7 - 8 marks Very good enhancement. It enhances the functionality of the website.	5 - 6 marks Implemented some simple enhancements and/or they don't meet some of the requirements listed in the enhancement section.	3 - 4 marks Limited work and/or they don't meet some of the requirements listed in the enhancement section.	0 - 2 marks No or very limited work.
<b>Video Demonstration (5 marks)</b>	5 marks Excellent knowledge of the project is demonstrated. Presentation is highly creative and accomplished.	4 marks Very good knowledge of the project is demonstrated. Presentation is skilful and creative.	3 marks Adequate knowledge of the project is demonstrated. Presentation is clear and adequate.	2 marks Not enough information is presented. More practice is needed.	0 - 1 marks No or very limited information is presented. More practice is needed.

## Individual Report Marking Rubric

	9 - 10 marks	7 - 8 marks	5 - 6 marks	3 - 4 marks	0 - 2 marks
<b>Overall Presentation of Report (10 marks)</b>	Quality of report is truly professional, clear and easy to follow, has good structure, cohesive and well thought with the reader(s) in mind.	Quality of report is professional, clear and easy to follow and has good structure.	Quality of report is clear and has good structure.	Quality of report is somewhat clear, but still difficult to follow and/or it contains some spelling or grammatical errors.	Quality of report is unprofessional, difficult to follow and/or it contains numerous spelling or grammatical errors.
<b>Research on Security (15 marks)</b>	13-15 marks Comprehensive research is done with at least 8 citations, at least 5 points of improvements in the website are discuss	10-12 marks Well researched content with at least 5 citations, at least 3 points of improvements in the website are discuss	7-9 marks Adequate research content with at least 4 citations, at least 2 points of improvements in the website are discuss	4-6 marks Limited research or limited number of points in relation to the implementation is discussed	0-3 marks Insufficient information
<b>The Website (5 marks)</b>	5 - 4 marks Detailed information allows reader to understand the functionality and technical details of this website.	3 - 2 marks Adequate information allows reader to understand the functionality and technical details of this website.	1 - 0 marks Limited or insufficient information on the functionality and technical details of this website.		
<b>Your Contribution (10 marks)</b>	10 - 9 marks Your contributions are clearly listed and well discussed. <i>Challenges in your group work is included</i>	7 - 8 marks Your contributions are listed and explained.	5 - 6 marks Adequate information about your contribution to the project.	3- 4 marks Limited or insufficient information on your contribution to the project.	0 - 2 marks Minimal information does NOT allow reader to understand your contribution to the project.
<b>Reflection and Comments (10 marks)</b>	9 - 10 marks - Reflection demonstrates a deep commitment to the reflection process. - Convincing, critical, wellarticulated and rigorous discussions on the web development related issues.	7 - 8 marks - Reflection demonstrates a commitment to the reflection process. - Sound discussions on the web development related issues.	5 - 6 marks - Reflection demonstrates some commitment to the reflection process. - Satisfactory discussions on the web development related issues.	3 - 4 marks - Reflection demonstrates an interest to the reflection process. - Limited or insufficient discussions on the web development related issues.	0 - 2 marks - Reflection demonstrates little interest to the reflection process. - No or very limited discussions on the web development related issues.