Group Assignment

1. Introduction

1.1 Aims

Web application development is the process of developing a dynamic web application that involves both client-side and server-side programming skillsets. Through this CmU, learners will develop competencies in creating interactive and rich media web pages using web technologies. Learners will also be competent to integrate data storage in the web application using server-side programming. Learners will demonstrate competencies in undertaking a technical lead role to drive team discussions to generate new ideas in building web applications and collaborate using source version control tools.

1.2 CmU Learning Outcomes

At the end of this CmU, learners will be able to:

1. Design a responsive web application using web technologies according to the business requirements.
2. Build a dynamic web application using front-end and back-end programming frameworks.
3. Perform integration of application code and data storage to manage the data persistence for a web application.
4. Undertake a technical lead role to drive team discussions to generate new ideas in building web applications and collaborate using source version control tools.

2. Assignment Scenario

2.1 Background

You are a group of creative, innovative, and energetic programmers who intend to drive the digital innovation of a company by digitalising their existing businesses and creating an interactive and immersive online experience.

2.2 Proposal Presentation

Using User Stories or User Journey Maps, each team shall come up with the assignment proposal/specification complete with wireframe prototypes. Fancy or colourful prototypes are **not** required.

2.3 Final Presentation

The team shall then build the entire web application together to help the company digitalise. This includes integration of the different features that each team member is responsible for into **one Flask web application**, the group presentation of the completed web application, group reflection and individual reflection.

2.4 Human Sustainability

You are encouraged to incorporate elements that contribute directly or indirectly to **human sustainability**, which is one of the Four Pillars of Sustainability, into your web application. These are some areas you can consider working on (but you may come up with your own):

1. Supporting Persons with Intellectual Disabilities (PWIDs) and their families.
2. Helping low-income families with key issues such as managing finances, unemployment, marital woes etc.
3. Enabling companies to engage and benefit their stakeholders through Corporate Social Responsibility (CSR) programmes.
4. Helping companies to develop and adopt Socially Responsible practices.
5. Aiding companies in developing and managing Ethical Supply Chains.

For more information visit:

- *https://www.futurelearn.com/info/courses/sustainable-business/0/steps/78337*
- *https://arrowuniforms.co.nz/blogs/stay-sharp-blog/the-pillars-of-sustainability*

2.5 Team Size

- The team should consist of **3 to 4** members including the team leader.
- To form teams, each team member is to go to BrightSpace and under **My Class > Groups**, select the **same group** (any vacant group) to join.

2.6 Feature Requirements

The features must cover these general areas:

1. Account Management
2. Transaction Processing
3. Customer Support
4. Report Generation

The features must consider these two groups of users:

1. **User / Customer**

   The user/customer shall be able to do online transactions, submit enquiries and provide feedback. The user/customer interfaces are desktop PCs, kiosks and mobile devices (e.g. smartphones, tablets, etc.).

2. **Staff**

   The staff shall be able to do backend processing of transactions and generate reports for analysis to make critical decisions for the company. The staff interfaces are desktops that are PC based.

> ***Note:*** *If a team member's feature depends on data (or input) from another team members' feature, it is suggested to use* ***dummy data (or input)*** *first, then link the features together afterwards, in order to complete the required functionalities in time.*

2.7 Chosen Company

- Choose one company that your team would like to digitalise as part of their innovation drive. It can be an **existing company or a fictitious one**.

2.8 Minimum Feature Requirements

- Must be **web-based**, primarily targeting desktop and laptop users.
- Must utilize Python **classes and objects** in the application.
- Must implement **shelve** persistent storage for Python objects.
- **Data validation** to ensure data consistency must be performed.
- Information **update** operation must be performed via **shelve** persistent storage.

2.9 Additional Features (where applicable)

- Features to **enhance security** of the application.
- Interfaces for **batch uploading** of data.
- **Data visualization** on data collected.
- **Alert notification** on content changes.
- **Stock/quantity** level monitoring features.

2.10 Tools and Technologies

The application framework for this project shall be **Flask** for building web applications with Python. Where appropriate, you may utilize additional development frameworks, such as jQuery and/or Bootstrap.

3. Assignment Assessment

This assignment makes up 60% of the total CmU marks.

3.1 Assessment Components

Week	Deliverables	Individual	Group	Total
13	Assignment 1 - Proposal Pitching - Innovation (Business Needs) - Proposal (User Stories/User Journey Maps) - Presentation - Prototype (Wireframes)	 8% 5%	 2% 5%	20%
17	Final Presentation - Integration - Group Reflection - Flask Application - Presentation - Individual Reflection	 10% 16% 4%	 5% 5%	40%
		43%	17%	60%

4. Assignment Rubrics

4.1 Assignment 1 – Proposal Pitching (20%)

Group (7%)				
Category	**Poor**	**Satisfactory**	**Good**	**Excellent**
Innovation (2%)	Provide little analysis, description, and relevant key facts of the business needs that require digital innovation by the company/industry.	2-3 business needs that require digital innovation by the company/industry, each with some detailed analysis, description, and relevant key facts.	2-3 business needs that require digital innovation by the company/industry, each with detailed analysis, description, and relevant key facts.	At least 4 business needs that require digital innovation by the company/industry, each with detailed analysis, description, and relevant key facts.
Proposal (5%)	Provide little consideration in addressing the business needs.	2-3 User Stories/User Journey Maps for each digital innovation with some consideration in addressing each business need.	2-3 User Stories/User Journey Maps for each digital innovation with compellingly consideration in addressing each business need.	At least 4 User Stories/User Journey Maps for each digital innovation with compellingly consideration in addressing each business need.

Individual (13%)				
Category	**Poor**	**Satisfactory**	**Good**	**Excellent**
Presentation (4%)	Key ideas are unclear; presentation shows no effort, organization, elaboration, and use of visuals and graphics. Presenter appears very uncomfortable; displays poor use of eye contact, posture, gestures, and vocal expressiveness. No effort to engage audience and lack fluency and good pronunciation which affected audience understanding.	Key ideas lack clarity; presentation shows some effort, organization, elaboration, and use of visuals and graphics. Presenter appears rather uncomfortable; displays limited use of eye contact, posture, gestures, and vocal expressiveness. Some effort to engage audience, fluency and good pronunciation which aided audience understanding.	Key ideas presented clearly; presentation shows good effort, organization, elaboration, and use of visuals and graphics. Presenter appears comfortable; displays good use of eye contact, posture, gestures, and vocal expressiveness. Good effort to engage audience, fluency, and pronunciation.	Key ideas presented very clearly and convincingly; presentation shows excellent effort, organization, elaboration, and use of visuals and graphics. Presenter appears confident; displays effective use of eye contact, posture, gestures, and vocal expressiveness. Excellent effort to engage audience, fluency, and pronunciation.
Prototype (9%)	Wireframe design with little details and consistency in meeting user needs.	Wireframe design with at least 50% complete details and consistency in meeting user needs.	Wireframe design with at least 75% complete details and consistency in meeting user needs.	Wireframe design with complete details and consistency in meeting user needs.

4.2 Assignment 2 – Final Presentation (40%)

Group (10%)				
Category	**Poor**	**Satisfactory**	**Good**	**Excellent**
Integration (5%)	Not integrated. Solution presented on individual laptop.	More than 1 functions are not integrated and integrated solution had some errors.	Only 1 function is not integrated and integrated solution had no errors.	Fully integrated with no errors.
Reflection (5%)	No group reflection on good points, tasks done and things that can be improved.	Basic group reflection on good points, tasks done and things that can be improved.	Detailed group reflection on good points, tasks done and things that can be improved with basic justification.	Detailed group reflection on good points, tasks done and things that can be improved with strong justifications.

Individual (30%)				
Category	**Poor**	**Satisfactory**	**Good**	**Excellent**
Flask Application (18%)	Only 1 function or less (C, R, U or D) with poor use of UI components and little consideration in addressing the user's needs.	Completed 1 or more functions (C, R, U and/or D) with satisfactory use of UI components and some consideration in addressing the user's needs.	Completed 2 or more functions (C, R, U and/or D) with good use of UI components, mostly consistent layout and good consideration in addressing the user's needs.	Completed 3 or more functions (C, R, U and/or D) with excellent use of UI components, consistent layout and compelling consideration in addressing the user's needs.
Presentation (8%)	Key ideas are unclear; presentation shows no effort, organization, elaboration, and use of visuals and graphics. Presenter appears very uncomfortable; displays poor use of eye contact, posture, gestures, and vocal expressiveness. No effort to	Key ideas lack clarity; presentation shows some effort, organization, elaboration, and use of visuals and graphics. Presenter appears rather uncomfortable; displays limited use of eye contact, posture, gestures, and vocal	Key ideas presented clearly; presentation shows good effort, organization, elaboration, and use of visuals and graphics. Presenter appears comfortable; displays good use of eye contact, posture, gestures, and vocal expressiveness. Good effort to	Key ideas presented very clearly and convincingly; presentation shows excellent effort, organization, elaboration, and use of visuals and graphics. Presenter appears confident; displays effective use of eye contact, posture, gestures, and vocal expressiveness.

	engage audience and lack fluency and good pronunciation. Presented solution that is not clear and concise, and audience has difficulty understanding and following.	expressiveness. Some effort to engage audience, fluency, and good pronunciation. Presented solution with limited clarity and conciseness; audience sometimes find it challenging to understand and follow.	engage audience, fluency, and pronunciation. Presented solution clearly and concisely for audience understanding.	Excellent effort to engage audience, fluency, and pronunciation. Presented solution clearly, concisely, and convincingly.
Reflection (4%)	No individual reflection on good points, tasks done and things that can be improved.	Basic individual reflection on good points, tasks done and things that can be improved.	Detailed individual reflection on good points, tasks done and things that can be improved with basic justification.	Detailed individual reflection on good points, tasks done and things that can be improved with strong justifications.