SWEN90016 Software Processes and Management

Semester 2 – 2022

Assignment Two

Learning Outcomes:

The students will demonstrate the ability to:

- **Justify** an appropriate Software Development Lifecycle (SDLC) model for a software project.
  - **Appendix B** Case Study describes the project.
- **Plan** the activities in the chosen SDLC process.
  - **Appendix A** template used.
  - Every member of the team must research multiple development frameworks and the team must justify the selection of one framework.
  - Document the selection and team consensus process
- **Execute, monitor, control** and document the activities in the chosen SDLC process.
  - **Appendix A** template used
  - Develop working software, which must have a web User Interface and persistent data storage
  - Use Appendix A template to document activities
- Work effectively in a **team** to deliver the objectives of the project.
  - Use meeting minutes and timesheets to document teamwork
  - **Appendix C** template is optional used for Individual Peer Assessment.

Note

Each member is expected to spend 30-40 hours on assignment 2, as per the subject handbook. Therefore, the group assignment is projected to take 100-120 hours.

Your team is not expected to spend the same amount of time on this assignment as a professional software engineer would spend on a project where they are employed full time.

These assignment tasks are designed to be achievable by a SWEN90016 student team, where the students can allocate a quarter of their time to this unit, considering a full-time student would have three other concurrent units. Spread out the assignment tasks over the intended weeks, using a genuine SDLC process, to learn the most from this assignment.

Key Deliverables and Marks:

ID	Artefact	Submission	Date	Subject Marks
1	Project Plan Version 1.0 Sections 1-5	Canvas – team submission	Week 7 Friday 4:00pm 9th September 2022	14
2	Project Execution Version 1.1 Update Section 1-5 (as needed). Section 6-10 Project Retrospective (Section 10) Teamwork Reflection	Canvas – team submission	Week 11 Friday 4:00pm 14th October 2022	14
3	Individual Peer Assessment Students can be assessed individually, based on their contribution to the team, and can receive less marks than others in their team.	Canvas – individual submission as a single report	Week 12 Friday 4:00pm 21st October 2022	N/A
4	Final Product – Software System	Group demonstration	Week 12 Workshops	2

University Holidays

Grand Final holiday: Friday 23rd September

Monday 26th September To Sunday 2nd October: Non-Teaching Period and Universities Australia Common Vacation Week

Team Dispute Resolution

You are expected to resolve disputes within your team as a standard component of team communication. If unresolved concerns over the level of contribution from each team member occur, you should alert your tutor early and also submit an Individual Peer Assessment using Appendix C.

Do NOT leave it until just before the deadline to alert the teaching team.

Software Development Advice:

Your team may use any programming language/technology/framework to develop the software system.

- Your team may choose to develop using a simple web development platform such as WordPress (https://wordpress.com/create-website/). Research your choice adequately, as some web development platforms require payment for the web functionality expected of this assessment. Your team is not expected to pay for any of these development platforms. Make sure that your choice of the technology platform has the capability to address all the requirements of this assessment

- Your team may choose to develop using a full-stack development framework and require the team use technical development skills. If your team seeks this technical experience, the marks may not justify the time you spend. Consider your team's programming skills.

- This Assignment Two is worth 30% of the subject marks.
    - The final product is worth ~7% of this assignment, (2/30 subject marks).
    - How well your team plans, manages and executes the SDLC process, and your teamwork skills, are worth more than ~93% of this assignment, (28/30 subject marks).

- The maximum size of the assignment (including diagrams and appendices) is set to 80 pages. As a guideline, 500 words using a font size of 12 points is ~1 page.

Submission Feedback

- All submissions and feedback will be via Canvas
- The submission must be written in English
- The business tone, content, structure, and expression of your submission will influence the marks

Late Submission

The project is due at 4:00pm sharp on the date of submission, Melbourne time. Any submissions received past this time (from 4:01pm onwards) will be considered late unless an extension has been granted. There will be no exceptions. There is a mark penalty of 10% for a late project, plus an additional mark penalty of 10% per 24 hours.

Assignment Extension Requests

If you need to make an extension request for Assignment 1, please complete this online form (you can upload documentation here):

SWEN90016 Assignment 2 Extension Request Form: https://forms.office.com/r/1mUmeS6qjY

- You will be prompted to log into your unimelb account.
- Please complete the form instead of sending an email - if you do you may be requested to complete the online form.

We are using this online form to facilitate extension requests, to help students with the process. This means that the teaching staff can review your request and send a response more quickly. We often receive requests with incomplete information, which can slow down evaluating the request.

Using the form allows us to ensure that students are informed, have considered/gathered necessary documentation before submitting the request, and have provided enough information for us to evaluate the request.

- There is a link to university information about Special consideration, including circumstances that may be eligible.
- There is a link to university information about how to register for ongoing support with the university.
- There is a link to what to do if you have COVID. You need to provide certain documentation for this.

Academic Misconduct

University policy is that assessment work must be the independent work of the students concerned. Plagiarism, or copying of another's work without proper acknowledgment, is not permitted. Nor is it permissible for anyone to allow another person to copy their work for the purposes of assessment.

The University Policy and Procedures for Academic Misconduct can be found at:
https://academichonesty.unimelb.edu.au/#policy

Appendix A – Project Template

1. Title Page

<Include your choice of SDLC in the document name, for example

T22_06_Agile

T05_01_Incremental

Include team members

First Name	Last Name	Student Number

2. Executive Summary (10 marks)

<Give your stakeholders a concise preview of the project's plan, purpose and approach. Briefly explain why the project is being undertaken by the client and the desired outcomes and likely benefits, and how long it will take to complete. Organised the information in the same sequence as the document. Use plain English and expand acronyms the first time they are used. Keep the executive summary succinct and contained to a single page.>

3. Table of Contents

4 Project Initiation

4.1 Key Stakeholder Analysis (5 marks)

< Identify the key stakeholders for the project. Include power and interest analysis. Exclude sensitive influence and engagement analysis, which should not be published in the PMP, as the PMP is intended for stakeholder audience. >

4.2 In-Scope Features (10 marks)

<Detail the scope of the project. Clearly state what your team is planning to deliver.

A formal SDLC requires Use Cases to define the requirements.
An Agile SDLC requires a groomed Product Backlog .>

***If you are a team of 3**, identify which In-Scope feature you will not be implementing.*

4.3 Out-of-Scope Features (5 marks)

<Identify a list of features the project team isn't responsible for delivering.>

4.4 SDLC Delivery Approach (20 marks)

☐ Waterfall ☐ Incremental ☐ Agile

*< **Justify** why the chosen SDLC model is suitable for the Case Study. Include a comparison to at least one other SDLC in your argument.> Teams are not allowed to choose a Hybrid approach*

4.5 Constraints (5 marks)

<State any constraint that exist.>

5 Project Governance

5.1 Roles and Responsibilities (5 marks)

*<Identify the roles and responsibilities of the team. **Example**:*
Waterfall: Business Owner / Project Manager / Senior User / Subject Matter Expert / Developer
Agile: Product Owner / Scrum Master / Dev Team Members / Subject Matter Expert>

***If you are a team of 6,** one of your team members will take the role of **User Experience** professional. Research and describe what this team member will contribute to the project.*
***If you are a team of 5 or less**, do not have a dedicated User Experience team member.*
***If you are a team of 3**, team members can have multiple roles.*

First Name	Last Name	Role and Responsibility	Activities

5.2 Communication Plan (10 marks)

< Communication Matrix table (refer to below, lecture and tutorial) describes your team's communications.>

Owner	Meeting Title	Audience (Stakeholder)	Objective	Frequency	Format (virtual / face2face)

Regular Communication Table.

<Meeting Schedule table, (refer to below) describes a history of your team meeting minutes and identifies any Escalation Triggers, (such as: when a team member repeatedly ignores teamwork messages). Include a contingency plan for managing an escalation event.

Note: an Agile team does not need to do a Stand-Up meeting every day, as this is the expectation of a full-time team. Two Stand-Up meetings per week is reasonable>

Meeting Date & Time	Location	Goal	Escalation Trigger

Meeting Schedule Table.

5.3 Risk Management (25 marks)

*<Show 5 key, **specific** risks in the Risk Impact Analysis Table; ordered from highest to lowest priority. Exclude generic risks such as time, cost and scope.> (10 marks)*

Risk ID	Specific Risk Type Business/ Project/ Product	Description	Probability	Impact	Justification *<why is it a keyrisk?>*

Specific Risk Impact Analysis Table

*<Show 5 key **generic** risks in the Risk Impact Analysis Table.>*

Risk ID	Generic Risk Type Business/ Project/ Product	Description	Probability	Impact	Justification *<why is it a key risk?>*

Generic Risk Impact Analysis Table

*<For 5 of the **specific** risks identified in the Risk Impact Analysis Table, show how they can be controlled by the team in the Risk Register.> (10 marks)*

Risk ID	Trigger	Owner	Response	Response Strategy	Resources Required

Risk Register

5.4 Technology (20 marks)

< Summarise your research into multiple technologies for the software product development, Include at least two language/technology/framework in your discussion. Justify your team's choice of language/technology/framework. >

5.5 Execution Plan (25 marks)

< A formal SDLC plan for weeks 9, 10 and 11 *includes: a Work Breakdown Structure (WBS) with links to the Use Cases, dependencies on a PERT chart, a Gantt chart with resources and weekly milestones.*

An Agile SDLC plan for week 9 only, (*the first Sprint), includes:*
a Sprint Goal, a Sprint Backlog with links to the Product Backlog, an initial Sprint Swimlane/Kanban board, an ideal Burndown Chart with Story Points on the y-axis & expected Velocity.>

6 Quality of Feedback Response (10 marks)

<Your team needs to respond to the feedback advice given by your tutor by updating the previous assignment submission. >

7 Project Execution, Monitoring and Control

7.1 Project Status: **Friday Week 9** (5 marks)

< A summary of your project status, and how you are tracking with respect to formal SDLC milestones/Agile Sprint Goals. This should be a genuine, accurate and brief reflection, not generic, not a repeat of the content in section 8.1.n. (Similar in purpose to an Agile Sprint Retrospective.) >

7.1.1 Process Related Artefacts (15 marks)

<Include process related artefacts that demonstrate how well you were executing and managing the process. You may include these artefacts in an Appendix with a reference.

Meeting minutes, and a timesheet per member are required for all SDLCs.
If you are a team of 6, include User Experience team member contributions.

Progress Gantt charts, updated schedules, milestones, Earned Value Analysis, schedule value analysis.

or

Images of Kanban boards, Sprint Plan meeting outcomes, (Sprint Goal, Sprint Backlog), Sprint Review inputs and outcomes, actual velocity, burndown charts.>

7.1.2 Product Related Artefacts (10 marks)

< Include all products related artefacts. Designs, completed features lists, screen shots to showcase the product and any other artefacts that demonstrates your product development progress, (you may include them in an Appendix with a reference from this section).

Other artefacts that show progress, such as code written by your team (if applicable), must be submitted as a .zip file through the submission link provided for this purpose>

7.1.3 Risk Monitoring and Control (5 marks)

< Update the Risk Register in Section 5.3 with any changed risk status:

- *Did any of the risks originally identified occur?*
- *If the risks occurred, did you mitigate the risk as planned?*
- *Did you identify new risks?*

Explain how the risks identified were handled within your Agile sprints.

or

Identify how and in which SDLC phase your formal SDLC handled and minimized the impact of risks.

7.2 Project Status: **Friday week 10** (5 marks)

< Refer to 8.1 description.>

7.2.1 Process Related Artefacts (15 marks)

< Refer to 7.1.1 description.>

7.2.2 Product Related Artefacts (10 marks)

< Refer to 7.1.2 description >

7.2.3 Risk Monitoring and Control (5 marks)

< Refer to 7.1.3 description >

7.3 Project Status: **Friday week 11** (5 marks)

< Refer to 7.1 description.>>

7.3.1 Process Related Artefacts (15 marks)

<Refer to 7.1.1 description.>

7.3.2 Product Related Artefacts (10 marks)

< Refer to 7.1.2 description.>

7.3.3 Risk Monitoring and Control (5 marks)

< Refer to 7.1.3 description.>

8 Quality of Monitoring (10 marks)

<No written response is required for this section. Section_8 Quality is determined by:

- *Genuine, concise, and transparent monitoring in Section_8*
- *each monitoring section links coherently with the other sections*
- *each monitor section is without repeated narratives in all sub-sections*
- *consistent with the product demo in week 12*
- *consistent with your meeting minutes*

Your monitoring should deliver insight into the implementation of your software development process to an external stakeholder. Persuade you tutor to trust this monitoring of SDLC activities and outcomes.>

9. After the project

9.1 Project Retrospective (10 marks)

<Report on the lessons learnt, technology performance, what worked well and what didn't.>

9.2 Teamwork reflection (5 marks)

< Reflect on the group's teamwork quality.
Identify communication principles and your team member roles (initiator, harmoniser, …).
Reflection on team interaction and communication styles. Analyse the influence these factors had on

10. Optional Peer Assessment (no marks)

<Individual and private reflection. Optionally assess the quality of teamwork using the Appendix C.

Section 10 submitted on a separate Canvas submission link.

Appendix B – Case Study

Semester 2 – 2022
Indigenous Languages: Revival and Reclamation
Online Research Tool

General Note

This case study is based on the needs of a real person client. The client, Dr. Susan Joyce, is a VCE Year 12 language expert teacher in Japanese, German, and the Indigenous Dhudhuroa language, teaching in Bright, Victoria, with relevant language revival and reclamation experience. The following information was created in consultation with, and has been verified by, the client.

Background

Language researchers and participants seek to revive and reclaim endangered indigenous languages and culture, [1] [2].

Student groups enrolled in the UniMelb SWEN90016 Software Processes and Management subject have been assigned to develop Online Language Research tool prototypes, (described below).

If this initial prototype is successful, the client will have access to enhance the prototype using a $20k cash grant from the University of Melbourne's Accelerator Program [3], plus inner-city office space at Melbourne Connect innovation precinct and access to mentoring from some of the best business minds in the country.

The client wants her Online Language Research tool to:

- Capture the language custodian's language knowledge and cultural context.
- Allow authorized researchers to collaborate/share language resources and processing techniques.
- Identify & promote significant language research results to a wider community.
- Identify & demote duplicate/insignificant research results to reduce information glut.
- Protect the copyright of language data produced by local indigenous language custodians, [4].
- Enhance the reputation of language preservation and accelerate indigenous language acquisition.

Software Project Goals

This online tool project aims to deliver:

- a 3-tiered web application architecture
- a web portal user interface
- a data tier with permanent storage of:
    - user profiles
    - diverse data types relevant to language applications.
        - Refer to the ***English Language - Static Example*** page feature for language data type examples
- data privacy protection:
    - configurable authentication and authorization protocols to protect sensitive research
        - Refer to ***English Language - Dynamic Demonstration Example*** page feature user permission details

Online Tool - Initial Features.

1. Diverse data type handling, (text, symbols, images, songs). Must be able to upload, download and view/hear each data type.
2. A ***Welcome*** page to allow unregistered researchers to register users.
3. A ***Login*** page to allow registered users access to the ***Home*** page.
4. A ***Home*** page which showcases the latest significant research results.

5. Data integrity and security
    a. An ***Authorization Request*** page that allows registered users to request CRUD (create, read, write, delete) permission to the ***Dynamic Demonstration Example*** domain data.
    b. A ***User Groups*** page that enables users to be organised into subsets. The system must be able to create user groups, handle membership and assure that data registered to a specific user group is shared only with users within that group.
    c. A ***Text Searching*** page for registered users to enter criteria for searching & retrieving text data shared with them.
    d. An **optional** ***Authorization Admin*** page for admin users to approve or decline user permission requests, (this is optional, it can be done manually via database updates)

6. A drop-down menu of permission restricted ***Languages*** pages

    a. An ***English Language - Static Example*** page: static, hardcoded *English* content and no permission restrictions.
        i. Display 4 data types: 2 sentences, 5 symbols, 3 images, and 1 song
        ii. Display a UML Information Model of the data tier, [1], [5].

        iii. An ***Indigenous Community Knowledge*** sub page
        Example: Victorian Indigenous cultures are linked to languages. Language is core to reviving cultural and spiritual practices. Indigenous ancestral languages uphold Indigenous worldviews.
        VCE component: [1] - page 9
        Example: Placenames, cultural sites, Dreaming, Tracks, [1] - page 37.

        iv. A ***Culturally Relevant Perspective*** sub page,
        Example: “Aboriginal and Torres Strait Islander communities are the custodians of their cultural and linguistic heritage. The lived experience Indigenous people have of their languages should be valued and respected as highly as the technical knowledge which consultants bring to a project”,
        FATSIL protocol: [4] - page 11.

b. An ***Indigenous Dhudhuroa Language*** page, with restricted access
    i. Access is restricted to persons granted appropriate permissions.
    The Dhudhuroa indigenous community wishes to restrict access to the client, Dr. Susan Joyce, and community members. While initially an empty placeholder page, the client should have permissions to add information.
    Note: The purpose of this page is to demonstrate the restricted access feature.

c. An ***English Language - Dynamic Demonstration Example*** page, with dynamic data:
    i. configurable permission restrictions
    ii. a landing page which allows the user to view/hear language data
    iii. an upload data capability
    iv. a download data capability

7. A **FATSIL Privacy and Copyright** page, [4], with permission compliance guidelines.

Future Enhancements - out of scope for the initial prototype development

8. Include more data types, such as video of dance.
9. A ***Search Page*** to construct searches of unstructured data, using *metadata tagging category* technology.
10. A ***Data Integrity*** module to monitor for junk data.
11. A ***Data Analysis*** module to recognize speech patterns and understand language, [6].
12. A data format ***Translation*** module to convert raw data to an internal system format.

Initial Stakeholders

1. The client, Dr. Susan Joyce (she/her), Languages Coordinator/VCAL Coordinator, Bright P-12 College, a language researcher affiliated with the University of Melbourne.
2. The Dhudhuroa Community and elders – Gary Murray, Dhudhuroa language custodian
3. A client representative resource, such as this Case Study, your tutor, or the SWEN90016 Assignment_2 Canvas Forum
4. The development team, a group of software engineering students from SWEN90016.
5. The registered users of the system: academics, researchers, language learners. They are technically competent with web applications and are able to do upload, search & download activities.
6. The admin user, who is a person from the development team, who can grant permission to the registered users to access the ***English Language - Dynamic Demonstration Example*** or ***Indigenous Dhudhuroa Language*** pages.

Reference

[1] "Indigenous Languages of Victoria: Revival and Reclamation Victorian Certificate of Education Study Design Victorian Curriculum and Assessment Authority," 2004. Accessed: Aug. 08, 2022. [Online]. Available: http://www.vcaa.vic.edu.au/Documents/vce/indigenouslanguages/IndigenousSD.pdf

[2] "The Emergence of Spoken Israeli Hebrew." [Online]. Available: https://www.tau.ac.il/~izreel/publications/Emergence_Hary2003(corr).pdf

[3] Themap.co. 2022. *The Melbourne Accelerator Program*. [online] Available at: <https://www.themap.co/> [Accessed 31 March 2022].

[4] FATSIL Language protocols Available: https://www.wipo.int/export/sites/www/tk/en/databases/creative_heritage/docs/fatsil_protocol_guide.pdf

[5] (PDF) A Comprehensive Survey on Word Representation Models: From Classical to State-Of-The-Art Word Representation Language Models (researchgate.net)

[6] Natural Language Processing and Big Data: A Powerful Combination, 2014, Gil Allouche. Accessed: Aug. 08, 2022. [Online]. Available:Natural Language Processing and Big Data: A Powerful Combination - DATAVERSITY

Appendix C – Peer Assessment

Student Name: Student #: Team #:

Other Team Members Names						
	Specific Aspect	**Self**	**Team Member 2**	**Team Member 3**	**Team Member 4**	**Team Member 5**
	Name					
Team Process	Attended team meetings					
	Maintained contact with others					
	Contributed constructively in team discussion					
	Cooperated in team activities					
	Encouraged & assisted other members					
The Tasks	Complete assigned tasks on time					
	Contributed intellectual ideas and solved problems					
	Did their fair share of the work					
	Read and commented in a timely manner on report					
Overall	Based on your ratings, this student's overall contribution					
How would you divide $1000 among all the team based on their contribution to your project		**$**	**$**	**$**	**$**	**$**

Scale

1 – did not contribute in this way
2 – willing but not very successful
3 – average contribution to process or tasks
4 – above average contribution to process or tasks
5 – outstanding contribution to process or tasks

If you do not divide the $1000 equally among all team members, complete the team reflection.