Title: e-Portfolio Submission – https://helenhelene.github.io/eportfolio/

Final Reflection

Introduction

This reflection records my learning outcomes from the Software Engineering Project Management (SEPM) module. The module not only deepened my understanding of SEPM theories and concepts but also enhanced my soft skills, significantly contributing to my professional and personal development. It provided valuable insights into effective project management methodologies, collaborative teamwork, and practical applications of software engineering principles.

Summary of learning outcomes

A central component of this module was our first team project, developing a proposal for a computer development initiative called "Synputer." The proposal detailed suitable development methodologies, requirements, development plans, milestones, deliverables, and estimated costs.

Another key assignment was the individual project presentation which is the second deliverable of the team project – a presentation to stakeholders on mitigating challenges and implementing changes. This assignment focused on soft skills like change management and presentation abilities, crucial for project managers who need to translate technical information for non-technical audiences. In my professional role, I often

present financial results to stakeholders without a financial background, facing similar challenges.

Beyond the presentation content, I learned how to record a presentation and add subtitles, which is an unexpected but valuable part of the learning process.

The final assignment was the e-portfolio submission (Appendix 1) and reflection, documenting my entire MSc Computer Science journey. For more insight into my background, an About Me section (Appendix 2) is available on the GitHub-hosted website. I separated each unit with individual learning outcomes and reflections (Appendix 3), which record all artefacts from my learning journey and practical experiences.

Throughout the module, I completed all discussion and e-portfolio activities (Appendix 4), including collaborative discussions, Gherkin exercises, data structures reflections, risk assessment, estimating tools activities, and code improvement and testing. Several pieces of work left me a strong impression and prompted reflection. For example, Unit 9 Improving Code Quality (Appendix 5) allowed me to revisit and enhance my first Python program using techniques learned, such as adhering to PEP 8 standards, using snake_case, and incorporating meaningful docstrings. I observed significant improvement and knowledge gained during this journey. Units 3 and 8 (Appendix 6) were also enlightening, offering a chance to deeply understand the data structure of YouTube Music, which I use daily but had not previously analyzed.

Evidence of Teamwork and Peer Interactions

During the team project, as the only member in a different time zone and with a different mother tongue, I faced challenges coordinating with peers. However, our team demonstrated remarkable adaptability, scheduling meetings convenient for all.

We exemplified effective collaboration. The team contract we developed outlined roles, responsibilities, and expectations, fostering accountability, and regular meetings facilitated open communication (Appendix 7).

I am relatively strong in documentation and administrative work, so I took the initiative in drafting the team contract, taking minutes, outlining milestones, and calculating budgets and costs (Appendix 8). My financial and management background enabled me to contribute effectively. Other team members, with strengths in software development, focused on creating domain models, Gantt charts, and reviewing technical requirements to ensure realism in our proposal.

We utilized tools like Trello (Appendix 9) for task management and shared documents for collaborative editing. Every team member had a clear role allocation based on individual strengths, enhancing team efficiency (Appendix 8).

One instance highlighting teamwork was when we faced uncertainties in the project's technical requirements and timeline. A team member suggested using domain modeling

and Gantt charts to visualize our proposal. This peer-led knowledge sharing enhanced our understanding and improved our proposal.

Learning and Changed Actions

Initially, I felt apprehensive about group work due to time zone differences, fearing missed discussions and communication barriers. However, as we collaborated, these anxieties diminished. The team's willingness to accommodate my schedule made me feel valued.

Excited by the opportunity to apply theoretical knowledge practically, I also felt pressure from coordinating vital project components. These emotions motivated me to be proactive and diligent. Positive team dynamics boosted my confidence, leading me to take on roles I might have previously avoided.

Peer feedback was instrumental in shaping my behavior. Recognition of my organizational skills encouraged greater contribution, while constructive criticism helped me identify areas for improvement, such as enhancing technical detail in documentation.

Through challenges, I realized the importance of effective communication, adaptability, and embracing diverse perspectives. Coordinating across time zones required flexibility and planning. I became more proficient with project management tools like Trello and developed skills in drafting comprehensive team contracts.

The experience taught me the value of clear role allocation based on strengths, enhancing efficiency. Recognizing my team members' diligence inspired me to strive for higher standards.

The skills and knowledge developed have significant real-world applicability. In my role as Head of Finance and IT Operations, upcoming projects involve digitalization and ERP system migration. With a deeper understanding of the project life cycle and management methodologies, I can contribute more effectively, particularly in requirement gathering, user acceptance testing (UAT), and enhancing user experience.

My ability to draft detailed project documentation, manage budgets, and outline milestones are directly transferable skills. Improved proficiency with project management tools will aid in coordinating tasks and communicating with stakeholders professionally.

Professional Skills Matrix

Level of competence (Rewo, 2024)
- ○ No Competence
- ◔ Low Competence
- ◑ Some Competence
- ◕ High Competence
- ● Expert
- ⊗ Not relevant

Skills	Competence	Evidence
Time Management	●	Completed all assignments and activities on time while balancing professional commitments.

Resilience	◕	Overcame anxieties about teamwork in a different language and time zone; adapting to new tools and methods and persisting through challenges.
Critical Thinking and Analysis	●	Applied critical thinking in code quality improvement and project proposals.
Problem-Solving	◕	Self-learned to use alternative IDEs for coding exercises and to record presentations with subtitles.
Communication and Literacy	◕	Drafted clear project documents, presented to stakeholders, and engaged in collaborative discussions.
IT and Digital	◐	Improved proficiency in project management tools such as Trello and collaborative editing tools.
Interpersonal	◕	Participated actively in team meetings and fostered positive working relationships.
Teamwork / Global Citizen and Leadership	◕	Contributed to project planning and facilitated communication embracing cultural diversity.
Emotional Intelligence	●	Maintained effective collaboration by positively addressing personal emotions and peer feedback.
Critical Reflection	●	Reflected on learning outcomes in the e-portfolio and connected experiences to professional roles.

Conclusion

The SEPM module has been a transformative experience, enhancing my capabilities in software engineering project management. The challenges I encountered led to personal growth and a deeper understanding of effective teamwork. The skills acquired are directly applicable to my professional role and have prepared me for future projects requiring collaboration and project management expertise.

References

Rewo. (2024) What is a skills matrix. Available from: https://www.rewo.io/skills-matrix-for-manufacturing/ [Accessed 16 October 2024].

Appendix 1: e-Portfolio Submission

https://helenhelene.github.io/eportfolio/

Helen SIU

Head of Finance and IT Operation
Email: helen819@gmail.com

View My LinkedIn Profile

View the Project on GitHub
HelenHelene/eportfolio

E-Portfolio of

Helen SIU

Professional Qualification

PECB ISO/IEC 27001 Foundation

HKICPA Certified Public Accountant

ACCA Fellow member

Education

MSc Computer Science (In Progress)

Master of Management Science - Accounting (2008)

About Me

University of Essex Learning Experience

- Induction Module
- Module 1 Launching in Computer Science
- Module 2 Object Oriented Programming
- Module 3 Network Security
- Module 4 Information Security Management
- Module 5 Software Engineering Project Management
- Module 6 Secure Software Development
- Module 7 Research Methods and Professional Practice
- MSc Computing Project and Dissertation

Appendix 2: About Me

About Me

Welcome to my e-portfolio! My name is Helen Siu, and I am a highly experienced Certified Public Accountant (CPA) with a solid background in CPA firms, multinational corporations (MNCs), and listed companies. With over 20 years of professional experience, I have honed my expertise in finance and IT operations. I take pride in optimizing finance management processes, leading budgeting and planning initiatives, and driving digital transformation projects. Currently, I am pursuing an MSc in Computer Science to further expand my skill set.

In addition to my financial and IT roles, I am also appointed as the company officer of data protection in my current organization. Ensuring the confidentiality and security of data is a top priority for me.

Beyond the professional sphere, I am passionate about cats. These adorable creatures bring immense joy to my life. Furthermore, I have a creative side that finds expression through leather crafting. I enjoy working on personalized leather goods, exploring my creativity, and finding fulfillment in the process.

My proactive nature, independence, and excellent interpersonal skills have been instrumental in my career success. I am fluent in Cantonese and proficient in English and Mandarin, enabling me to effectively communicate and collaborate with diverse teams.

Thank you for taking the time to learn more about me. If you have any further questions or would like to explore potential opportunities, please feel free to reach out.

Appendix 3: List of SEPM Units

Module 5 Software Engineering Project Management

In this module, we explore what it means to be a Project Manager in software engineering. We examine the relationships between the Project Manager and stakeholders, ensuring the triple constraints of project management are balanced without accruing technical debt. From a practical perspective, we consider how to respond to customer needs using test-driven and behavior-driven development. We identify and apply appropriate methodologies, tools, and techniques for developing solutions to real-world problems.

We explore the implications of computer and network architectures for system-level design, focusing on risk and quality management. We design, develop, and evaluate management systems to handle constraints and uncertainties, incorporating BDD concepts and secure coding practices. Students systematically develop skills to be effective team members in a virtual environment, adopting real-life perspectives on roles and team organization.

There are three assignments in this module. In the first assignment, we participate in the team submission and individual peer assessment. For the team submission, we need to develop a proposal detailing a suitable development methodology, requirements, development plan, milestones, deliverables, and estimated costs.

The second assignment requires students to present to stakeholders, providing a status update, plan, and budget to address challenges from the first assignment.

Lastly, we are expected to submit an e-Portfolio, gathering evidence of work and submitting a reflective piece on personal development throughout the module.

Assignment 1: Development Team Project (🏅Pass with Distinction)

Project Report - Synputer

Assignment 2: Development Individual Project *(Work in progress)*

Presentation

Assignment 3: Individual Module e-Portfolio *(Work in progress)*

Final Reflection

The units presented below serve as a compilation of evidence, showcasing the work accomplished in this module and documenting the learning journey.

Unit 1: Introduction to Software Engineering Project Management

Unit 2: Study: Why Projects Fail and Gathering Requirements Exercise

Unit 3: Estimating, Planning and Risk

Unit 4: Estimating Tools and Risk Assessment

Unit 5: User Experience

Unit 6: pytest and Test-Driven Development

Unit 7: Software Development Life Cycles

Unit 8: Python Data Structures

Unit 9: Quality Management Strategy

Unit 10: Software Quality Monitoring in Python

Unit 11: Software Engineering Project Management: Future Trends

Unit 12: The Case for the Future Direction of Software Engineering Project Management

📑 **You may also refer to the** List of Artefacts **for quick access to all artefacts.**

Appendix 4: List of Artifacts

List of Artefacts for Each Unit

Unit(s)	Component	Artefacts
1 - 4	Collaborative discussion 1	Project Failures Study: Initial post, Peer Response 1, Peer Response 2, Summary post
2	Seminar Preparation	Requirements Gathering
3	e-portfolio Activity	Data Structures Reflection
4	Wiki Entry	Risks and Risk Mitigation
4	Seminar Preparation	Estimating Tools and Risk Assessment
5 - 7	Collaborative Discussion 2	Scanning Exercise and Results : Initial post, Peer Response 1, Peer Response 2, Summary post
6	Jupyter Notebook Activity	pytest
7	e-Portfolio Activity	Emotional reactions
8	Seminar Preparation	Data Structures
9	e-portfolio Activity / Jupyter Notebook Activity	Improving Code Quality
10	Jupyter Notebook Activity	Using Linters to Achieve Python Code Quality
10	e-Portfolio Activity	Reflection on Software Quality

These artefacts collectively document the learning journey and practical application of concepts throughout the SEPM module.

Return to Module 5

Appendix 5: Unit 9 – Improving Code Quality Exercise

e-Portfolio activity: Improving Code Quality

Introduction

Refer to the Mertz (2019) resource.
Use some Python code which I have developed in the past and apply at
least 3 of the strategies presented at the source to improve its quality.

Original Python code

Below is the Python code developed in the past

```python
# Phone Book Application
# Define each function individually and run a loop until

# Define global variable to store contact
myPhoneBook = {}

# Define a function for main menu
def mainMenu():
    print("\nWelcome to the Main Menu")
    # Function ID: OPT01
    print("1. Display all contacts")
    # Function ID: OPT02
    print("2. Insert a new contact")
    # Function ID: OPT03
    print("3. Delete an existing contact")
    # Function ID: OPT04
    print("4. Sort contacts")
    # Function ID: OPT05
    print("5. Search for a contact")
    # Function ID: OPT06
    print("6. Exit\n")

# Define a function for OPT01-Display all contacts
def displayContact():
    # If myPhoneBook is not empty, loop through and outpu
    if len(myPhoneBook) > 0:
        for myName, myNumber in myPhoneBook.items():
            print(myName, ":", myNumber)
    # If myPhoneBook is empty, output error message
    else:
        print("\nPhone Book is empty. Return to Main Menu

# Define a function for OPT02-Insert a new contact
def insertContact():
    # Get user input for contact name
```

Appendix 6: Unit 3 and Unit 8 – Data Structure Exercises

e-Portfolio Activity: Data Structures Reflection

Requirement

Read Dicheva & Hodge (2018). Think about an online system which you use on a daily basis. Consider how it might operate at the back-end using data structures.

Introduction

When thinking about an online system I use daily, I'll consider YouTube Music, a music and video streaming service. To understand how YouTube Music might operate at the back-end using data structures, we can break down the application into its core functionalities and identify which data structures are likely used to support each feature. Dicheva & Hodge (2018) focus on the educational benefits of using games to teach data structures, especially stacks. While the paper is specific to teaching stacks, the core idea of using data structures to manage complex operations is highly relevant to YouTube Music as well.

Here are some examples of how YouTube Music might use different data structures for its operations:

1. Playlists and Queues

One of the most common features of YouTube Music is the ability to create and manage playlists. A playlist is essentially a collection of songs that can be played in sequence or shuffled.

Data Structure: Queue

- **Reason:** A queue would be a good data structure for handling the "Next" and "Previous" song functionalities. When a song is played, it is dequeued from the front of the queue, and the next song can be played automatically.
- **Example:** When you hit "Next," the system dequeues the current song and enqueues it to a history list , or a stack.

2. Recently Played Songs

YouTube Music often allows users to re-listen to recently played songs or navigate back to a previously played song.

Data Structure: Stack

- **Reason:** A stack is naturally suited for handling the "Last In, First Out" (LIFO) behavior of a history of played songs. When a user

Seminar Preparation: Data Structures

Below two different data structures to hold the data associated with the list of functional and non-functional requirements in **previous tasks** with justification.

Queue

- **Functional Requirements:**
  - **Playlist Management:** Queues handle song order, allowing users to play, skip, or replay songs seamlessly.
  - **Navigation:** Supports "Next" and "Previous" song functionalities efficiently.

  Justification: Queues are ideal for maintaining the order of songs, allowing easy access to the "Next" and "Previous" functionalities. This aligns perfectly with the playlist's sequential nature.

- **Non-Functional Requirements:**
  - **Performance:** Ensures smooth playback with minimal delay when transitioning between songs.
  - **Scalability:** Can manage large playlists without performance degradation.

  Justification: Queues provide efficient operations for adding and removing songs in a playlist, ensuring smooth transitions with minimal delay. Moreover, as playlists grow, a queue can handle an increasing number of songs without significant performance loss.

Hash Table

- **Functional Requirements:**
  - **Fast Lookups:** Quickly retrieves song, artist, or album data when searching or selecting.
  - **Efficient Metadata Access:** Provides immediate access to song details for playback and recommendations.

  Justification: Hash tables enable quick retrieval of song, artist, or album data, which is crucial for search and selection features.

- **Non-Functional Requirements:**
  - **Efficiency:** Offers constant time complexity for search operations, ensuring rapid response times.
  - **Reliability:** Consistently retrieves accurate data, enhancing user trust and experience.

Appendix 7: Minutes of Meeting (MoM) and Team Contract

https://helenhelene.github.io/eportfolio/SEPM/SEPM_A1_MoM.html

List of Minutes of Meeting (MoM)

Date	Title
1 August 2024	Establishment of the Group
2 August 2024	Team Contract
8 August 2024	Preparatory Tasks
15 August 2024	Project Report Draft
22 August 2024	Project Report - Review
27 August 2024	Word Count Limit
1 September 2024	Project Report Refinements
5 September 2024	Project Report Refinements
7 September 2024	Project Report Final Review

Team Contract

Date	Title
2 August 2024	Group 1 - MASH

Return to Assignment 1 - Project Report - Synputer
Return to Assignment 3 - e-Portfolio
Return to Module 5

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Appendix 8: Evidence of Collaborative and Teamwork

Minutes of Meeting

Project Report Draft

15 August 2024

Meeting organizer: Anda Ziemele
Minute taker: Helen Oi Lam Siu
Time: 12:30 UK | 19:30 HK
Venue: Google Meet
Team Members: Anda Ziemele, Helen Oi Lam Siu, Mario Butorac, Samuel Harrison

Participants:
Anda Ziemele (Anda)
Helen Oi Lam Siu (Helen)
Mario Butorac (Mario)
Samuel Harrison (Sam)

No	Topic	Detail	Status	Follow up	Deadline
1	Report outline	1.1 Helen prepared the report outline based on the assignment requirements before meeting. 1.2 Anda reviewed the document and made comments.	WIP	All members will review and agree on the final outline by the next meeting.	By the next meeting date.
2	Methodology	2.1 Mario suggested using an agile methodology. 2.2 Sam proposed using Secure Scrum. 2.3 Helen agreed with the agile approach to simplify the process. 2.4 Anda expressed a preference for the hybrid methodologies, as software and hardware development can require different approaches. 2.5 All members agreed to submit their suggestions with justifications via WhatsApp by Friday, after which a vote will take place.	WIP	The vote on the agreed-upon methodology will take place after everyone submits their ideas. Mario will finalize the Methodology section based on the agreed-upon methodology.	16 August 2024
3	Requirement Gathering	3.1 All members agreed that it was unnecessary to go through the script together line by line. 3.2 Sam prepared the case study notes, including initial requirements, material costs, and recommendations before meeting.	WIP	All members will review and finalize the requirements by the next meeting. Anda will outline the assumptions.	By the next meeting date.

No	Topic	Detail	Status	Follow up	Deadline
		3.3 Mario reviewed the script and Sam's suggested requirement list, confirming that they had similar outputs. 3.4 Sam and Mario consolidated the information and integrated it into the requirement table. 3.5 Anda suggested adding a priority level to each requirement. 3.6 Mario emphasized the importance of adhering to the word count limit. 3.7 All members agreed to simply separate the requirements into categories, each with a designated priority level.			
4	Gherkin Specifications	4.1 Helen and Mario contributed some Gherkin statement before meeting. 4.2 One more is needed to meet the minimum requirement of ten statements.	WIP	All members will review and add the missing statement by the next meeting.	By the next meeting date.
5	Development Plan	5.1 Helen outlined the development plan before meeting. 5.2 Mario proposed presenting the timeline graphically, e.g. using a Gantt chart. 5.3 Anda listed the key elements for Gantt charts: dependencies, activities, effort, and timeline. 5.4 Sam will propose a testing schedule, including unit testing, integration testing, system testing, and UAT, based on the assignment requirements. 5.5 Mario will prepare a Gantt chart to present the timeline. 5.6 Helen proposed presenting the development budget using a pie chart to keep the report concise. 5.7 Helen will prepare the development budget, including testing and design costs. It will be adjusted based on the final timeline and person-days. 5.8 All members agreed that it is uncertain in assignment description what is proposed deliverable in the development plan.	WIP	Mario will send email to professor to clarify the meaning of "proposed deliverables". Task allocation: - Gantt: Mario - Testing: Sam - Budget: Helen - Assumption: Anda Detail task allocation please refer to Trello.	Ongoing
6	Machines Cost	6.1 Helen collected cost data from the BoM before meeting, but noted these figures may be amended based on the final agreed-upon requirements.	WIP	Helen will adjust the unit cost based on the finalized requirements.	Ongoing

No	Topic	Detail	Status	Follow up	Deadline
7	Pricing Strategy	7.1 Sam expressed that the selling price should be similar to computers with comparable specifications in the 1980s. 7.2 Helen explained that the sales price would be determined based on the market price during that period, the finalized actual cost, and the expected gross profit.	WIP	Helen will review the case study's brief history to search for any relevant pricing clues and then develop a pricing strategy.	Ongoing
8	Literature Reference	8.1 Helen recommended some references for agile and waterfall methodologies. 8.2 Anda recommended some references for requirement gathering, hybrid methodologies, and hardware development.	WIP	Anda will search for literature references on requirement prioritization.	Ongoing
9	Report finalised date	9.1 All members agreed to finalize the report by 6 Sep 2024 (Friday).	Done	N/A	6 Sep 2024
10	Task allocation	10.1 Anda updated the Trello board with task allocations.	Done	N/A	N/A
11	Next meeting time	11.1 All members agreed to collaboration on the Google Doc and continue discussions via WhatsApp before the next meeting. 11.2 All members agreed that the next meeting could be scheduled on next Thursday via Google Meet.	WIP	Anda will send all members the meeting invitation upon final confirmation.	22 Aug 2024

1   2   3

Appendix 9: Trello Dashboard

SEPM: Group 1 — Board

To do
- Outline Project Timelines
- Agree on final costs
- Write up final document for submission
- Proof-read and check final document for submission
- Create Gantt chart for project timeline ☑ 0/4
- Build diagrams ☑ 0/3
- Adjust requirements based on best practice
- Run final draft through turn it in prior to submission
- Complete individual peer review

Doing
- Literature Review: Development methodologies ☑ 2/4
- Extract initial requirements
- Write Requirements section
- Literature Review: Requirements prioritisation
- Make notes on the script
- Write Assumptions section
- Add missing requirements

Done
- Clarify from tutor re: Deliverables 💬 1
- Finalise Requirements in Gherkin
- Read the script
- Write Methodology section
- Agree on development methodology 🕐 Aug 17 💬 1
- Send e-mail to tutor 🕐 Aug 5
- Create Team Contract
- Read the script

Done
- Organise meeting to discuss script
- Found reference for methodology
- Outline Costs section - Development budget & Unit Cost ☑ 0/4
- Sales prices strategy
- Write Deliverables section
- Write Testing section
- Create draft proposal outline
- + Add a card