COS20007

Object-Oriented Programming

Learning Summary Report

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Self-Assessment Details

The following checklists provide an overview of my self-assessment for this unit.

Self-Assessment Statement

	Pass (D)	Credit (C)	Distinction (B)	High Distinction (A)
Self-Assessment				✓

Minimum Pass Checklist

	Included
Learning Summary Report	✓
Test is Complete	✓
C# programs that demonstrate coverage of core concepts	✓
Explanation of OO principles	✓
All Pass Tasks are Complete	✓

Minimum Credit Checklist (in addition to Pass Checklist)

	Included
All Credit Tasks are Complete	✓

Minimum Distinction Checklist (in addition to Credit Checklist)

	Included
Custom program meets Distinction criteria & Interview booked	✓
Design report has UML diagrams and screenshots of program	✓

Minimum Low-Band (80 – 89) High Distinction Checklist (in addition to Distinction Checklist)

	Included
Custom project meets HD requirements	✓

Minimum High-Band (90 – 100) High Distinction Checklist (in addition to Low-Band High Distinction Checklist)

	Included
Research project meets requirements	

Declaration

I declare that this portfolio is my individual work. I have not copied from any other student's work or from any other source except where due acknowledgment is made explicitly in the text, nor has any part of this submission been written for me by another person.

Signature: **Chien**

Portfolio Overview

This portfolio includes work that demonstrates that I have achieved all Unit Learning Outcomes for COS20007 Unit Title to **a Low-Band High Distinction** level.

This portfolio reflects my comprehensive understanding and application of all the OOP concepts which I have learned throughout COS20007. By submitting all the Pass, Credit, Distinction tasks and a HD custom project, I think that I should get the High Distinction grade.

There are some reasons why I think I should get HD for this COS20007. The first reason is because I have noticed my mistakes and resubmitted my task for the Semester Test, where I was marked Re-submit. Moreover, I have already finished all the weekly Pass tasks, Credit tasks, and Distinction tasks on time. Besides that, I have also done the D Custom Program Initial Design, HD Custom Program Initial Design, and I also follow all the requirements on those tasks to achieve the level of High Distinction.

During the course, besides spending time reading all the slides, and watching all the lectures on Canvas, I also read materials outside the course materials to support me with the weekly tasks and the HD Custom Project. Through this course, I learned about the principles of OOP: polymorphism, abstraction, inheritance and encapsulation. However, I also needed to read materials on the internet about OOP Design Patterns such as Observer, Strategy and Singleton to help me reach the requirements for HD Custom Program. Furthermore, working with SplashKit, specifically with Bitmap and Animation, was quite new for me, so it also took me quite a lot of time to get insight into this SplashKit library. The ways that I learned about SplashKit and Design Patterns were mostly through websites on the internet and videos on Youtube.

Overall, even though my initial aim is to get HD (90-100), I believe that I should get the HD (80-90) because of the time, effort and my progress in this unit.

Task Summary

To demonstrate my learning in this unit, I would like the following tasks to be considered part of my portfolio:

1.1P - Preparing for Object Oriented Programming – **Submitted/Completed**
1.2P - Object Oriented Hello World – **Submitted/Completed**
2.1P - In Person Check-in 1 - Tools – **Submitted/Completed**
2.2P - Counter Class – **Submitted/Completed**
2.3P - Drawing Program - A Basic Shape – **Submitted/Completed**
2.4P - Case Study Iteration 1 - Identifiable Object – **Submitted/Completed**
3.1P - Clock Class – **Submitted/Completed**
3.2P - The Stack and Heap – **Submitted/Completed**
3.3P - Drawing Program - A Drawing Class – **Submitted/Completed**
4.1P - Drawing Program - Multiple Shape Kinds (UML Diagrams updated) – **Submitted/Completed**
4.2P - Case Study - Iteration 2 - Players Items and Inventory - **Submitted/Completed**
5.1P - In Person Check-in 2 - Drawing Program - **Submitted/Completed**
5.2P - Case Study - Iteration 3 – Bags – **Submitted/Completed**
5.3C - Drawing Program - Saving and Loading – **Submitted/Completed**
6.1P - Case Study - Iteration 4 - Look Command – **Submitted/Completed**
6.2P - Key Object Oriented Concepts – **Submitted/Completed**
6.3D - D Level Custom Program Initial Plan – **Submitted**
6.5HD - HD Level Custom Program Initial Plan - **Submitted**
6.6HD - HD Level Custom Program – **Submitted**
7.1P - Case Study - Iteration 5 - Tying it Together – **Submitted/Completed**
7.2C - Case Study - Iteration 6 – Locations – **Submitted/Completed**
9.1P - In Person Check-in 3 - Case Study – **Submitted/Completed**
9.2C - Case Study - Iteration 7 – Paths – **Submitted/Completed**
10.1C - Case Study - Iteration 8 - Command Processor – **Submitted/Completed**
11.1P - Clock in Another Language – **Submitted/Completed**
T1-1 - Semester Test Fix and Resubmit - **Submitted/Completed**

Reflection

The most important things I learnt:

Throughout this COS20007 unit, I have learned a lot of important knowledge that will be extremely important for my academic career in Computer Science:

- The first essential thing to me is the OOP concepts: abstraction, polymorphism, inheritance and encapsulation. Those concepts are completely new to me, but I already expected to learn about them in this course. I find that they are significantly crucial for me because they can help me to make my code more structured, and so on, and I am sure that I will definitely need them in the future.
- The second important thing is the OOP Design Patterns, I did not expect to study about this in this course. To me, these design patterns are extremely essential because they gave me a wider knowledge about coding and increased my interest in Computer Science.
- Last but not least, one more important thing that I have learned is self-study skills. This is because SplashKit is completely new to me, I had to spend a lot of time researching about it and reading information on the internet myself. Actually, this will help me a lot in the future units that I will attend at Swinburne and even in my career.

The things that helped me most were:

Things that helped me most were OOP concepts and Design Patterns. These things helped my code become shorter and look better, and they also helped my code become easy to read and understand. These important things were helpful for me in doing the weekly tasks, especially in the HD Custom Program.

I found the following topics particularly challenging:

In this COS20007 unit, OOP concepts and Design Patterns are the most helpful, but they are also the most challenging. Because they are completely new to me, I had to spend a lot of time learning. Another challenging thing for me is the Iteration from 6 to 8, those iterations do not give specific instructions like the previous iterations, which made them more complicated.

I found the following topics particularly interesting:

The fundamental concepts of Object-Oriented Programming (OOP), such as abstraction, encapsulation, inheritance, and polymorphism, along with Design Patterns, were particularly intriguing to me. These topics provided a structured approach to coding, allowing for more modular, reusable, and maintainable code. Understanding OOP concepts helped me think systematically about software design, while design patterns offered better solutions to common programming challenges. Patterns like Singleton, Observer, and Factory simplified the development process and promoted best practices.

I feel I learnt these topics, concepts, and/or tools really well:

Honestly, I feel that I learn these topics and concepts really well. This is because I can apply all of them into my Custom Program, such as the use of Observer, Strategy and Singleton

design patterns. After applying those patterns, my code looked more organizable and maintainable. Besides that, I also use abstraction, polymorphism, inheritance and encapsulation inside my Custom Program, and I had the solutions for almost all the weekly tasks.

I still need to work on the following areas:

The most important area that I still need to work on is the use of design patterns. There are a host of design patterns with different uses in different contexts, so I think I must spend more time studying those patterns to apply them into my future projects.

My progress in this unit was …:

In this unit, my progress was good because I always submitted my weekly tasks on time, and I also checked my tasks very carefully. I believe that I successfully applied good time management strategies this semester. Therefore, even though I finished all the given tasks and the HD custom program, I still had enough time to relax during the semester. I sometimes engaged with my tutor when I had some problems and that actually helped me a lot because I could understand the problems and finish it in a shorter amount of time, which affected partly to my grade. From my work, I think that in the future units, I should apply time management strategies to ensure my consistency in submitting my assignment, giving me more time to relax and focus on other subjects.

This unit will help me in the future:

I think that these OOP concepts and Design Patterns will be with me in my future studies and career as well because they are all essential for a Computer Scientist. I am sure that in the future I will work with C# or some other OOP languages, where I must apply the knowledge that I studied in this unit into. Therefore, things I learned in this unit will definitely be valuable and beneficial for my future.

If I did this unit again I would do the following things differently:

If I were to retake this unit, I would still strive to complete the course to the best of my ability. Additionally, I would create a more efficient timetable to finish iterations more swiftly because my timetable right now is quite good but not enough. This approach would allow me more time for custom projects, where I could unleash my creativity. Furthermore, I would also have time to explore new concept

Other…:

Programming fascinates me because it constantly introduces new concepts and challenges that I have yet to master. This curiosity drives me to explore and solve problems. I find that the most difficult tasks are often the most engaging, and programming, with its inherent complexity, offers an endless array of challenges that keep me intrigued and motivated.