End of Module Assignment E-portfolio Reflection

Reflection on Object-Orientated Programming - What I Have learned in this Module

I was new to Object-Orientated Programming and have it a challenging Unit to not only learn the concepts, but to carry out the formative and summative tasks, putting theory into practice.

In Unit 1 was an introduction to Information Systems and their importance, it looked at problems that can arise and the SDLC (Systems Development Lifecycle).
I researched Information System Failure using the Fujitsu Horizon System Post Office scandal.

In Unit 2 I continued to learn about Information Systems, looking at En Route Automation Modernization (ERAM) System and the issues they faced when implementing this in the USA (Torres et al, 2015).

Unit 3 developed my knowledge in Object Orientated Design and understanding that Objects contain different states included behaviours and data (Philips, 2018). It was important to differentiate between classes and objects, that is, a class contains an object. I also learned about inheritance, composition and polymorphism to pass traits from one class to another (Lutz, 2013), e.g. a dog; dogs have things in common e.g. four legs, teeth, 2 ears etc., however there are different breeds so there are also differences. As part of this I produced an object orientated design for a supermarket.

In Unit 4 I learned about object-oriented programming (OOP) in python including how to write classes, although I had done python programming, OOP was new, I had to learn and practice classes which is the blueprint for producing your own data (Hall, 2009). This is something I needed to practice a lot more of, prior to the python project.

In Unit 5 I learned about Unified Modelling Language (UML), this was a way of modelling the system and showing different classes, as well as encompassing inheritance, composition and polymorphism in this process (Ambler, 2003). There was a formative exercise where improved the Supermarket OOP design from Unit 3.

For Unit 6 I gained practical knowledge of UML through creating UML diagrams for a Doctors Surgery. I had to consider what classes to use and think about inheritance, composition and polymorphism. I created a class diagram, sequence diagram for booking an appointment and an activity diagram for the receptionist booking an appointment. These were new to me and I had to learn how to produce these using the correct symbols and terminology. This was helpful as we then had to complete a Mid-Module System Design Assignment.

Unit 7 covered database design and looking at designing a database looking at the third normal form, this is to stop data duplication taking place (Salzberg, 1986). This is applicable to OOP as when programming you do not want to reproduce the same code, this is achieved by writing classes with inheritance. I also carried out a

formative task with data, I then sorted these considering tables, primary keys, items for each table and how I would link these to other tables to avoid duplication.

Unit 8 used the knowledge from the last Unit and put it into practice. I looked into entity relationship diagrams (ERD) gaining an understanding of how this shows the data that needs to be included in the database (Cagiltay et al, 2013). I investigated alternatives to SQL by researching and writing about NoSQL and its use when analysing Big Data.

In Unit 9 I looked further at SQL (Structured Query Language), I practiced SQL by using Codio as there was a series of exercises. This is an area where I do need to develop further.

In Unit 10 I looked further at SQL, again I used Codio to look at MySQL and the Advanced SQL Unit. I also further researched the trends towards the use of NoSQL over SQL.

Unit 11 covered Pythons use in web design, I accessed the lecturecast, looking at Model-View-Controllers and how different parts interact with each other. I learned about Flask, a micro-web framework and looked at Flask examples. I developed knowledge on the Jinja library used by Flask and how Jinja behaves like Python (Ashley, 2020). This is an area I would like to develop as this utilises the skillsets I am developing in Python with web development.
At the end of Unit 11 I submitted the System Implementation summative assignment, discussed in the next section.

Unit 12 was a reflective exercise examining how the skills and knowledge will impact my future career. I have QTS and taught secondary computer science, however I now want to teacher A Level. I also submitted a blog on Robotic Process Automation (RPA).

Reflection on My Work in the Module

I completed a System Design for a self-service checkout for the Mid Module Assignment. I was new to UMLs and used the knowledge gained from Units 5 and 6 to create this. Using the scenario I looked at nouns that fell into groups (Liang, 2003). I separated candidate classes and shortened names for the coding element. I worked out the attributes and operations for Classes and created a diagram.

The System Implementation Assignment, was a struggle and I did not use a text file or csv, so my data was not stored and I should have used Panda for data manipulation.

The program did not work how I wanted it to and I had challenges to overcome and was at the point of giving up. I persevered and made progress however, I would have to more work to make this program do exactly what it needs to. I did see the advantages of using classes as it made debugging easier as well as developing my skillsets.

The e-portfolio was tedious. Why do we need to screenshot pages when we upload it to GitHub? The e-portfolio could have been submitted in a zip file.

Reflection on the Impact on My Professional/Personal Development

The reasons for completing this course is to gain skills and knowledge in Computer Science and return to teaching, where I would like to deliver this up to A' level, to do this I will further develop critical skillsets in OOP.
I will be one of the few teachers qualified in computing (Morse, 2018) and encouraging students to become the computing professionals of the future.

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