OOIS: Overall Module Reflection

Course: MSc Computer Science

Module: Object-Oriented Information Systems

Assignment: ePortfolio

Date: Saturday 24th July 2021

Student ID: 126853

Reflection:

The second module of the MSc Computer Science course provided us with an in-depth introduction to object-oriented systems development/design. Throughout this module, we have been introduced to various techniques, including UML diagrams, database design (Including Normalisation) and object-oriented Python development.

One of the main aims of this module was to appraise and evaluate the concepts and principles of an information system in relation to object-oriented systems. In addition, we focused on identifying whether best practices were used in specific situations and how this factor can affect the overall functionality of the Information System.

In particular, we discussed the overall risks of Information System failure and how these can have adverse effects not only on other businesses but the day-to-day life of an individual. From this aim, I have understood the overall concepts of Information Systems and considering the importance of comprehensive system planning to avoid potentially catastrophic consequences.

The next aim of this module was to design and document an object-oriented information system. We were introduced to the Unified Modelling Language to complete this aim, creating a series of diagrams including State Diagrams, Activity Diagrams and Class Diagrams. The Unit Reading list included the UML Distilled (Fowler, 2013) and Elements of UML Style (Ambler, 2003) books, both of which were valuable resources when learning the core concepts and limitations of the UML standard.

Through this module, I have learned the importance of performing adequate system planning at the early stages of the Software Development Life Cycle (SDLC) and how adequate system designs can help prevent information system failure later down the line. Within my professional career, I will aim to use techniques learnt within this module, such as UML, to identify distinct resources with a given brief, and plan the user journey using State Transition diagrams where appropriate.

The third aim of this module was to develop an object-oriented system design. Firstly, we were introduced to the core principles of object-oriented design, which includes Inheritance, Composition, Encapsulation and Polymorphism. These resources were available in the Codio online learning platform, which provided me with real-time feedback confirming my understanding of those topics and their implementation within Python.

To test our understanding of these techniques and the correct application, we were required to create a basic application for an ‘online store’. In addition, we would provide separate facilities for Customers, Staff Members and Sellers, which should demonstrate our practical understanding of object-oriented techniques, including Inheritance, Composition, Encapsulation and Polymorphism. This aim has helped me further understand the correct application of object-oriented techniques within a mainstream programming language such as Python.

The final aim of this module was to “Develop, implement and evaluate critically information system solutions to facilitate business decisions.”. This aim has required

us to consider the specific technologies used when implementing a final solution based on its particular merits in that situation. To demonstrate this, we were introduced to the concept of NoSQL databases and considering cases where its implementation could be would be preferred over conventional relational databases.

We learnt that, unlike conventional SQL databases, NoSQL databases share no common query language, and they don't require the user to pre-define a schema (MongoDB, n.d.), making it ideal for big data applications such as Analytics and Financial. A series of discussions occurred between myself and my peers within the Discussion forum. We considered the positives and negatives of implementing this technology based on various contributory factors, including business size, the volume of data, and overall structure. From this aim, I have understood that various factors can influence technologies used within Information Systems development, which need to be appraised on a case-by-case basis.

Throughout this unit, I have completed various tasks to demonstrate my understanding of Object-Oriented systems. Examples of these include Collaborative Learning (In the form of a Discussion Forum), creating UML diagrams, and implementing an object-oriented design within Python. These have enhanced my understanding of object-oriented systems, particularly with regard to the implementation within the Python language, as well as the creation of in-depth design documentation. This will be used to ensure I continue to produce high-standard applications, following industry-standard design methodologies.

References:

Fowler, M. (2013) UML Distilled: a brief guide to the standard object modeling language. 3rd ed. Boston, MA: Addison Wesley

Ambler, S. (2003) Elements of UML Style. Cambridge: Cambridge University Press

MongoDB. (n.d.) NoSQL vs Relational Databases. Available From: https://www.mongodb.com/scale/nosql-vs-relational-databases [Accessed 24th July 2021].