Launching into Cybersecurity – Units 7 through 9

This 12-week module comprises an introduction of the various core elements of the 2-year Master of Science in Cybersecurity program at University of Essex, Colchester England. Class of 2023. It intends to ensure a basic understanding of the primary skills that will be covered in greater detail during subsequent modules. It also provides insight and understanding of how the various specialties and occupational roles combine to provide a robust body of knowledge and skillset required to succeed in the field. While the student's final niche of practice may focus on only a few of the areas covered, it is beneficial to all who would master this critical field to gain a fuller understanding of the contribution and importance of all elements. As the units tend to build one up on another and contain summary review and reflection every few units, these journal entries will follow a similar track and cover three units in each.

This summary focuses on units 7-9 and the stated learning objects are:

- Develop the conceptual framework for database design.
- Apply the principles to implement a database management system.
- Understand database security issues.
- Implement basic Python scripts.
- Develop the ability to troubleshoot syntax and semantic errors in code.
- Develop the ability to implement a database using MySQL database management package.
- Develop the capacity to write Python script to accept input and store data in MySQL database.
- Implement security measures to data.
- Identify errors in security solution implementation code.
- Understand validated security requirements.

Initial, Pre-unit Baseline

Like units 4-6, these units focus on database design, management, and coding. I enter these better prepared than the previous as I've just completed units on modeling and coding. But now for a deeper dive….

Progressive Learning Experience.

A more in-depth look at database design from a security by design viewpoint. These units prepared me for the pending module project by addressing the potential issues and impacts of security during the development of each section during database design. Gained a greater appreciation for how a seemingly innocuous function can have a huge impact on interconnected functions/data. Critically analyzed the importance of a function (feature) vs. the security impacts. Discussed ways to help clients evaluate value of a feature vs. security.

Examined python code basics and syntax. Developed tools and methods to find errors in syntax or algorithms in python code. Learned how to call or send data to/from an external source such as a log file or external connected database.

Seminar #5 integration of Python and MySQL, implementation of security measures such as access controls and privileges, manipulating database and updating MySQL database using Python scripts.

Completed Essay (technical report) covering creation of a web-based appointment system for Queen's Medical Centre. (see separate link from module page)

Essential Reading

Downey, A., Elkner, J. & Meyers, C. (2012) *How to Think Like a Computer Scientist. Learning with Python.* Massachusetts, USA: Green Tea Press.

Connolly, T. & Begg, C. (2005). *Database Systems. A practical Approach to Design, Implementation, and Management*. Reading. Pearson / Addison Wesley.

Additional Reading

Connolly, T. & Begg, C. (2005). *Database Systems. A practical Approach to Design, Implementation, and Management*. Reading. Pearson / Addison Wesley.