Unit 2: Digital Applications - Content Summary

# Digital Applications

## Unit Desc.

The focus of this unit is on **managing and understanding** the complexity of a **data-driven system** by examining the individual components involved in its operation and the **interconnectedness** of those components.

Students develop the skills and knowledge required to analyse and examine existing applications. Applications could be as simple as a static website or as complex as a distributed learning and management platform.

They design and build their own applications to further their understanding of the interconnected nature of various digital assets.

## Unit Goals

* Critically analyse the components of systems, and their interconnectedness in order to rebuild, redesign and create applications
* Develop and extend computational thinking skills and strategies to identify, deconstruct, and solve problems

## Unit Content

1. Design Process
   1. Critically analyse and evaluate the application of a design process used in the construction of an existing system, for example, a simple game or a website
   2. Critically analyse and apply a design process, evaluating opportunities and constraints, and explain the decision making, when developing interconnected digital applications
   3. Critically analyse and apply the elements and principles of the creation of digital applications, for example an object-oriented system, a website, or a simple game
   4. Apply a design process to evaluate and develop the architecture of interconnected digital applications, for example, a class diagram, a use case diagram for a website, a game design document
2. Strategies, methodologies and procedures
   1. Evaluate strategies, tools, and processes required to produce digital applications
   2. Research and investigate interconnected systems and justify design decisions
   3. Analyse the selection and use of specific production tools which are appropriate for constructing digital systems
   4. Create a digital application, for example an object-oriented system, a website, or a simple game
   5. Design systems using computational, algorithmic and/or data-driven thinking
   6. Apply strategies to work both independently and collaboratively in time sensitive environments
3. Theories, concepts and materials
   1. Critically analyse the theories affecting the design and development of a digital application, for example, programming paradigms, client and server architecture for websites, effective management of user interaction
   2. Critically analyse and apply computer science concepts for problem solving in the development of digital applications
   3. Critically analyse the factors affecting the development of a digital application within the context of its design environment
   4. Critically analyse legal, social and ethical responsibilities associated with the development of digital applications
4. Contexts
   1. Critically analyse how design is influenced by context including social, historical and cultural, and how the design of a digital application may impact assets, solutions and projects
   2. Critically analyse the human considerations and challenges involved in the design and development of digital applications. For example the ethical, environmental and legal contexts, or the development of controversial technology
5. Communication
   1. Communicate accurately with others using correct terms in an appropriate format, both orally and in writing
   2. Communicate ideas and insights in a range of appropriate mediums to a variety of audiences
   3. Explain the process of solving design problems and justify the choices made during the development of digital applications
   4. Justify ideas coherently using appropriate evidence and accurate referencing
6. Reflection
   1. Reflect on own learning style and performance, including planning and time management, to develop strategies to improve own learning

# Overall Course Summary

* Digital Assets:
  + An individual, encapsulated, isolatable digital object
* Digital Applications:
  + A collection of interacting assets
* Digital Solutions:
  + An application, or series of applications, designed to solve a specific problem
* Structured Project:
  + Scaffolded project building. Could do it as a dictated, or student led, project.