**[Week 3 Reading Assignment (Milestone 3)](https://bblearn.griffith.edu.au/webapps/blackboard/content/launchLink.jsp?course_id=_48251_1&content_id=_2071244_1&mode=view)**

**Objective**

Now it is time to get an understanding of the more advanced concepts of [the Swift programming language](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/).

You may not be very familiar with some of these concepts as many of them are unique to modern programming languages (such as Swift), but you won't find them in older languages (such as Java or C++).  While you won't need to memorise every single detail about the programming language syntax (this is what the reference manual is for), it is important that you read the material carefully to understand the concepts discussed.  You will need them when writing your own programs!

**Sections to Read**

All the reading material for this week is contained in [the Swift Programming Language book (available for free online](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/) or as an [eBook](https://itunes.apple.com/au/book/swift-programming-language/id881256329?mt=11)).  The labs are open this week and it is highly recommended that you use Xcode playgrounds to experiment with the concepts you are reading about (rather than just reading the book and trying to memorise its content).  Make sure you read the following sections this week (most subsections will be dark red to indicate more advanced concepts that you might not be so familiar with - read them very carefully to make sure you fully understand these concepts!):

**Language Guide**

* [The Basics](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/TheBasics.html#//apple_ref/doc/uid/TP40014097-CH5-ID309)
  + Numeric Literals
  + Numeric Type Conversion
  + Type Aliases
  + Tuples
* [Basic Operators](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/BasicOperators.html#//apple_ref/doc/uid/TP40014097-CH6-ID60)
  + Nil Coalescing Operator
* [Strings and Characters](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/StringsAndCharacters.html#//apple_ref/doc/uid/TP40014097-CH7-ID285)
  + Unicode
  + Unicode Representation of Strings
* [Collection Types](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/CollectionTypes.html#//apple_ref/doc/uid/TP40014097-CH8-ID105)
  + Dictionaries
  + Arrays
* [Control Flow](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/ControlFlow.html#//apple_ref/doc/uid/TP40014097-CH9-ID120)
  + Switch (particularly "Tuples", "Value Bindings", and "Where")
* [Functions](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Functions.html#//apple_ref/doc/uid/TP40014097-CH10-ID158)
  + Functions with Multiple Return Values
  + Optional Tuple Return Types
  + Function Parameter Names
* [Closures](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Closures.html#//apple_ref/doc/uid/TP40014097-CH11-ID94)
  + Closure Expressions
  + Trailing Closures
  + Capturing Values
  + Closures Are Reference Types
* [Enumerations](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Enumerations.html#//apple_ref/doc/uid/TP40014097-CH12-ID145)
  + Enumeration Syntax
  + Matching Enumeration Values with a Switch Statement
  + Associated Values
  + Raw Values
* [Classes and Structures](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/ClassesAndStructures.html#//apple_ref/doc/uid/TP40014097-CH13-ID82)
  + Structures and Enumerations Are Value Types
  + Classes Are Reference Types
  + Choosing Between Classes and Structure
  + Assignment and Copy Behaviour for Strings, Arrays, and Dictionaries
* [Properties](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Properties.html#//apple_ref/doc/uid/TP40014097-CH14-ID254)
  + Stored Properties
    - Lazy Stored Properties
  + Computed Properties
  + Property Observers
  + Global and Local Variables
  + Type Properties
* [Methods](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Methods.html#//apple_ref/doc/uid/TP40014097-CH15-ID234)
  + Instance Methods
  + Type Methods
* [Subscripts](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Subscripts.html#//apple_ref/doc/uid/TP40014097-CH16-ID305)
  + Subscript Syntax
  + Subscript Usage
  + Subscript Options
* [Inheritance](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Inheritance.html#//apple_ref/doc/uid/TP40014097-CH17-ID193)
  + Defining a Base Class
  + Subclassing
  + Overriding
  + Preventing Overrides
* [Initialization](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Initialization.html#//apple_ref/doc/uid/TP40014097-CH18-ID203)
  + *Read the whole Section!*
* [Optional Chaining](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/OptionalChaining.html#//apple_ref/doc/uid/TP40014097-CH21-ID245)
  + *Read the whole Section!*
* [Type Casting](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/TypeCasting.html#//apple_ref/doc/uid/TP40014097-CH22-ID338)
  + *Read the whole Section!*
* [Nested Types](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/TypeCasting.html#//apple_ref/doc/uid/TP40014097-CH22-ID338)
  + *Read the whole Section!*
* [Generics](https://developer.apple.com/library/prerelease/ios/documentation/Swift/Conceptual/Swift_Programming_Language/Generics.html#//apple_ref/doc/uid/TP40014097-CH26-ID179)
  + *Read the whole Section!*