Session 07

**Learning Outcome**

Recap of data structures from 1st semester and some exercises

Can explain recursion

Can implement a simple recursive algorithm

Can explain time complexity

Can calculate the time complexity of methods

Can explain interfaces and abstract classes

Can use interfaces and abstract classes to specify contracts for classes

Can use generics in generic classes from the class library

Can implement generic classes with a single generic type parameter without advanced bounding

Can explain ordered binary trees and reason about the time complexity of search

Can explain the basic concept of (self balancing) 2-3 trees

Can explain the concept of sets and the Java implementation

Can explain the logical structure of a map

Can explain the idea behind the hashing function

Can in general terms explain how hashing can be used to map values to keys in a HashMap

Can implement the composite pattern in Java

Can implement a simple data structure (linked stack) in Java

Reading:

Carrano 1, 2, 3, 5, 21, 22, 23, 24, 25 + Interlude 1 (generics)