

1D1020 2018-09-03 #1

Course based on princeton course Buy the book!

Algorithms: methods to solve problems

Data structure: a structure to store information that can be used to implement/support an algorithm.

Abstract data types (ADT:s): a datatype with methods implementing an algorithm, well defined API

Understand, Select, Implement, Modify

"Algorithms + data structures = Programs" - Niklaus Wirth, 1976

Computational models are replacing analytical models

Individual examination Only copy from book, canvas or resource page.

C-like library is used for I/O instead of standard Java methods.

This course is not about a specific programming language

Primitive datatypes: pass-by-value

Objects and arrays: pass-by-reference

% java ClassName args[0] args[1]...

% java ClassName < data.txt to input from file (> to output to file)

Environment variables "Global variables on PC"

Data abstraction API (Application Programming Interface)

Encapsulation

Clear contract

Give the client only what is needed

Recursion, methods that call themselves.

- Base case must exist, otherwise the stack will overflow and the method will never return.
- Tail recursion, if no statements exist after the recursive call the recursion can be optimized by the compiler.