University of Pretoria Yearbook 2016

Data structures and algorithms 212 (COS 212)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Computer Engineering
	BEng Computer Engineering Engage
	BIS Multimedia
	BIT Information Technology
	BSc Information Technology Information and Knowledge Systems
	BSc(Computer Science) Computer Science
Service modules	Faculty of Engineering, Built Environment and Information Technology
Prerequisites	COS 110
Contact time	1 practical per week, 4 lectures per week
Language of tuition	English
Academic organisation	Computer Science
Period of presentation	Semester 1

Module content

Data abstraction is a fundamental concept in the design and implementation of correct and efficient software. In prior modules, students are introduced to the basic data structures of lists, stacks and queues. This module continues with advanced data structures such as trees, hash tables, heaps and graphs, and goes into depth with the algorithms needed to manipulate them efficiently. Classical algorithms for sorting, searching, traversing, packing and game playing are included, with an emphasis on comparative implementations and efficiency. At the end of this module, students will be able to identify and recognise all the classical data structures; implement them in different ways; know how to measure the efficiency of implementations and algorithms; and have further developed their programming skills, especially with recursion and polymorphism.

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