University of Pretoria Yearbook 2016

Compiler construction 341 (COS 341)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	18.00
Programmes	BIS Multimedia
	BIT Information Technology
	BSc(Computer Science) Computer Science
Prerequisites	COS 212
Contact time	1 practical per week, 2 lectures per week
Language of tuition	English
Academic organisation	Computer Science
Period of presentation	Semester 1

Module content

This module will introduce the student to the fundamentals of compiler construction. These include: the structural difference between a high-level and a von-Neumann language, the meaning of syntax and semantics and what semantics-preserving correctness means; the concepts of regular expressions, finite automata, context-free grammars in the context of programming languages; the need to construct parse-trees for given programmes; the application of data structures and algorithms for the purpose of code-analysis, code-optimisation and register-allocation; and the limits of code-analysis in terms of undecideability and the halting problem.
After successful completion of the module, the student will have an understanding of the importance of compilers and will understand how to implement a compiler, in terms of its components, the scanner, parser, type checker and code-generator for a given grammar.