

COSC 4P75

## COSC 4P75 Compiler Construction

Compiler Construction 1.1

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COSC 4P75

## COSC 4P75

- Dave Hughes J312
- prerequisites: 60% in 2P03, 2P12 and 2P90
- [outline](#)
- WWW and e-mail
  - dhughes@brocku.ca
  - <http://www.cosc.brocku.ca/offerings/cosc4p75/>
- course procedures
  - plagiarism
- project
  - written in Java with generated virtual machine code
  - Java-like language

Compiler Construction 1.2

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## Language Translation

- compiler
  - target language
  - source language
  - host computer
  - target computer
  - cross compiler
- target language
  - machine language
  - assembler
  - virtual machine language

Compiler Construction 1.3

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### Compilation Phases

- lexical analysis (scanning)
  - tokens
  - lexical rules
- syntactic analysis (parsing)
  - program structure
  - syntax rules
  - syntax errors

Compiler Construction 1.4

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- semantic analysis
  - semantic rules
  - scope checking
  - type checking
- code generation
  - storage management
  - environment handling
  - service routines

Compiler Construction 1.5

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### Compiler Construction

- principles
  - error free
  - guaranteed termination
  - detect as many errors as possible
  - minimal reporting of non-existent errors
- organization
  - pass
    - single-pass compiler
      - "defined before use" rule
      - forward branching
    - multi-pass compiler
      - intermediate code

Compiler Construction 1.6

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## Project Language

- language [definition](#)
  - lexical rules
  - syntax rules
  - scope rules
  - predefined entities
- sample program
  - Employee
  - Main
- compiler organization
  - single pass (4 phases)
  - target is assembly language ([virtual machine](#))
  - generated code
    - Employee
    - Main
- execution (amal)

Compiler Construction 1.7

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