

TDDD55 Compilers & Interpreters TADB44 Compiler Construction

2016

Organizational Issues

Martin Sjölund, IDA

Staff 2016

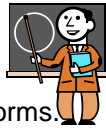
- Martin Sjölund (MS), Examiner, Course leader, Lecturer, Tutorial assistant TADB44
- Jonas Wallgren (JW), Lecturer
- Mahder Gebremedhin, Lab assistant TADB44
- Filip Strömbäck, Lab/tutorial assistant TDDD55
- adm-gu@ida.liu.se, Course secretary
- Ahmed Rezine, Director of studies

Lecture Plan



- F1: Introduction (MS)
- F2+3: [opt. f. TADB44] Short introduction to formal languages and automata (JW)
- F4: Lexical analysis; Symbol tables (JW)
- F5: Parsing; Top-Down Parsing (JW)
- F6: Top-Down Parsing cont., Bottom-Up Parsing (intro) (JW)
- F7: Bottom-Up Parsing [LR(0) items opt. f. TDDD55] (JW)

Lecture Plan (cont.)



- F8: Semantic analysis and internal forms. Syntax-driven translation. (MS)
- F9: Memory Management; Run-time organization (MS)
- F10: Code optimization (MS)
- F11: Code generation, general (MS)
- F12: [opt. f. TDDD55] Code generation for RISC and superscalar processors (MS)
- F13: Error management. Interpreters (MS)
- F14: Bootstrapping. Compiler Generators (MS)

Lessons/Tutorials

5 for TDDD55, by Filip Strömbäck
4 for TADB44, by Martin Sjölund

- Exercises on background theory (TDDD55)
- Preparation for the laboratory assignments
- Exam preparation session

Laboratory Assignments

- Separate for TDDD55 (2hp) and TADB44 (3hp)
 - TDDD55: 2 lab groups
 - Filip Strömbäck (2)
 - TADB44: 2 lab groups
 - Mahder Gebremedhin (2)
- Teams of size 2
- Register via webreg linked from the course homepages
 - Deadline for registration: Sunday November 13 2016
- Lab deadline: December 21 2016
- Recommended last day to hand in final labs is the last scheduled lab: 2016-12-15 (TADB44/TDDD55).



Exams

- Most assignments are the same for TDDB44 (3hp) and TDDD55 (2hp)
 - TDDD55: Formal languages / automata theory
 - TDDB55: Using an LR Parser
 - TDDB44: Creating an LR Parser
 - TDDB44: RISC/CISC
 - TDDB44: **Extra 3 points** on the regular exam if your labs are completed and approved before the deadline (and this is the first time you are registered on the course)
- For TDDD55 students, the exam can be challenging without adequate preparation. There is an extra tutorial session to prepare you for some of the harder exam assignments.
- The TDDB44 lab series also prepares you for the exam since the labs are much more extensive. Our experience is that TDDB44 students have an easier time preparing for the exam despite the assignments being more difficult.



Literature

Mandatory (more or less):

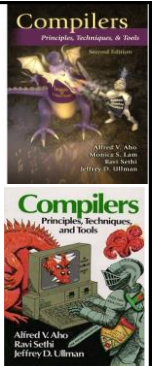
- Aho, Lam, Sethi, Ullman: *Compilers Principles, Techniques, and Tools, Second Edition*. Addison-Wesley, 2006. (Also as paperback, 2007; new edition 2013?)
- Or the old, first edition (still ok)
Aho, Sethi, Ullman: ..., 1986.

Mandatory for TDDB44:

- *Compiler Construction Lab Assignments*, Kompendium, 2016 (or 2014+), Bokakademien

Optional:

- P. Fritzsön: *TDDB44 Compiler Construction Lecture Notes*, 2016, and other lecture notes, are on the course home page.
- *Compiler Construction Exercises*, Kompendium



For more information ...

See the course homepages,

- www.ida.liu.se/~TDDD55
- www.ida.liu.se/~TDDB44

- Schedule
- Reading directions
- References to additional literature
- Laboratory instructions for TDDD55
 - (but the lab skeletons are in `/home/TDDD55`)

What comes after this course?

- Join our compiler research team at PELAB and do a **master thesis project** in compiler technology!
 - Compiling for OO modeling languages (P. Fritzsön, M. Sjölund)
 - Operational semantics based compiler generation (P. Fritzsön)
 - Compiler bootstrapping, international open source compiler, www.openmodelica.org (P. Fritzsön, M. Sjölund)
 - OO modeling language compilation on parallel machines (P. Fritzsön)
 - Compilation & parallel programming on industry clusters (P. Fritzsön)
 - Compiling for parallel / embedded systems (P. Fritzsön, C. Kessler, M. Sjölund)
 - Code generation for embedded systems (C. Kessler)
 - Debugger technology (P. Fritzsön, M. Sjölund)
 - ... and more!

