Bachelor Project in Compiler Construction

"the pizza meeting"

Kim Skak Larsen

Department of Mathematics and Computer Science (IMADA)
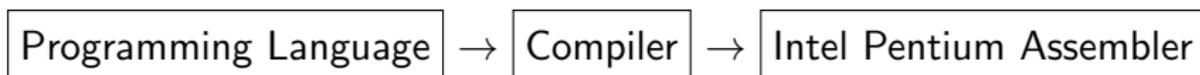University of Southern Denmark (SDU)

kslarsen@imada.sdu.dk

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Compiler Construction Formalities

- the default Computer Science Bachelor Project
- in the spring semester:
    - runs late January to late May
    - followed by exam, usually very late May or early June
      (so deadline is earlier than for other BS projects)
- concurrent with DM546 - Compiler Construction (prerequisite)
- ideally working in groups of three
- the project is organized in four parts with individual deadlines
- at the last deadline, the final bachelor report is turned in
- an oral exam as an individual defense of the group project
- compulsory core + individualization

Overall Project Structure

Programming Language $\rightarrow$ Compiler $\rightarrow$ Intel Pentium Assembler

- define programming language

- write compiler (in C)

- lots of programming

- increasingly interesting topics to work on – for large enough group

Compiler Construction Language

- basic types: integer and boolean
- operators on basic types
- composite types: sequencing and grouping
- control structures: conditional, iteration
- structuring: functions and static nested scope
- references and heap
- extras:
    - register allocation
    - garbage collection
    - peep-hole optimization
    - class hierarchy & objects
    - and many many more...

Compiler Construction Organization

Typical Parts

1. symbol table

2. scanning & parsing

3. type checking

4. code generation & optimization ($+$ 1, 2, and 3)
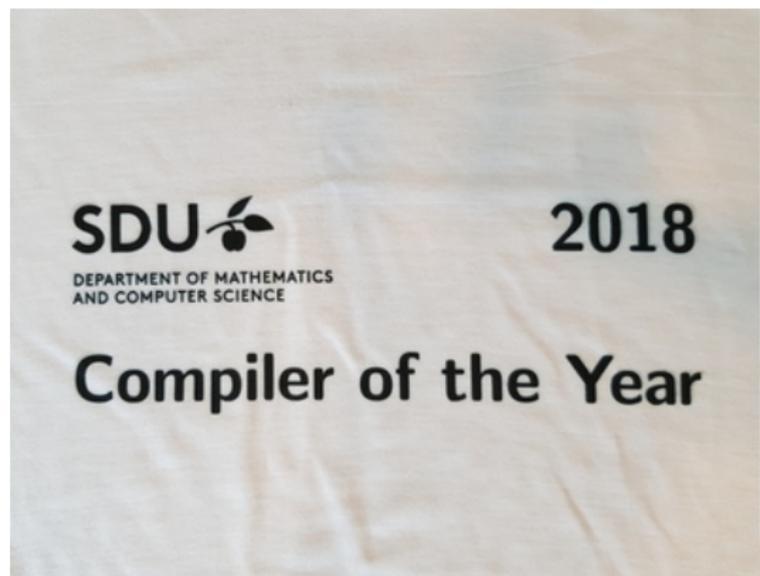
Advertising Compiler Construction

Very useful!

- Programming languages, query languages, specification languages, . . .

- Tools: html, XML, LaTeX, postscript, . . .

- Data/format conversions and interfacing

- Industry: Large companies typically maintain a collection of domain-specific production compilers

Compiler Construction Perks

Compiler of the Year Award T-Shirt

Rumors

The Good, the Bad, and the Ugly

- Is this for the best students?

- Is this for the worst students?

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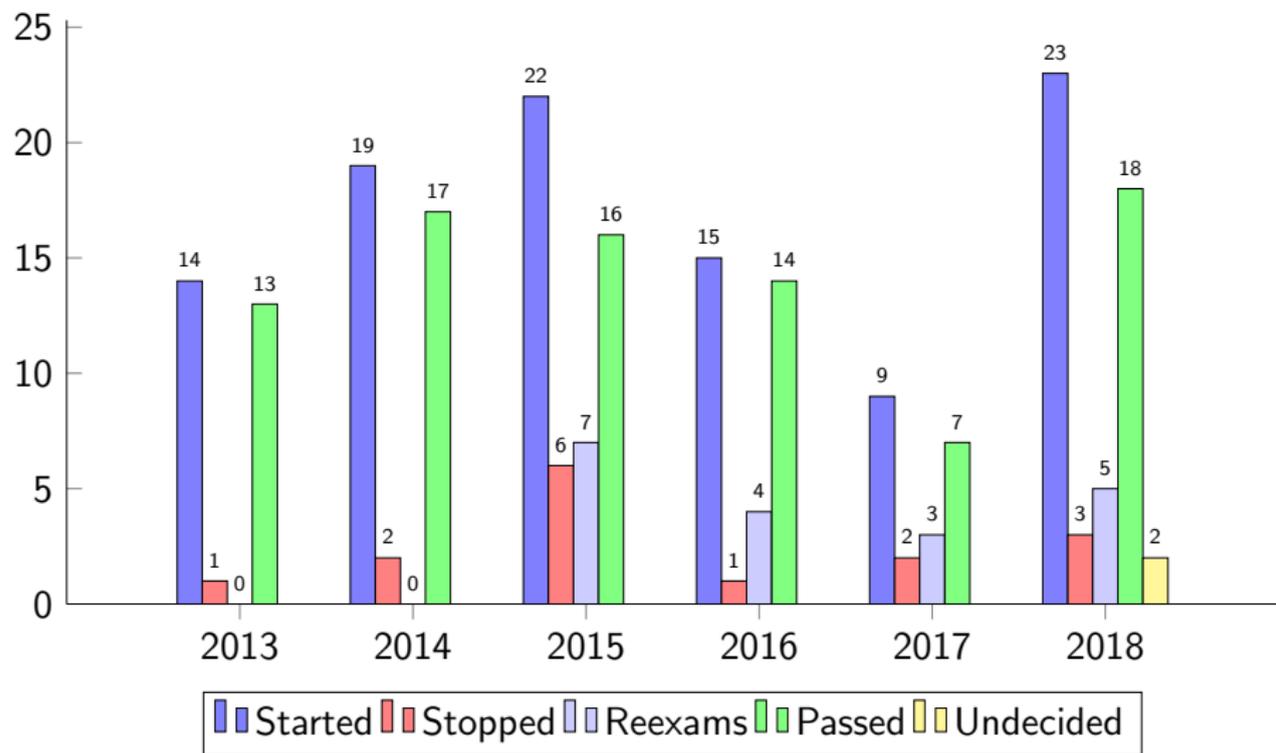
The answer is: Yes!

(and for everyone else)

Hall of Fame (selected winners)

Hall of Shame (selected losers)

Statistics

Bachelor Project in Compiler Construction

The default bachelor project in Computer Science

– *discuss the experience with older students...*

If you want another project, then

- find your own topic

- find an advisor

- prepare for greater personal responsibility defining a project

Signing up

I want this! What do I do?

- Sign up via the normal course registration and send me an email (check my pamphlet to see exactly how this should be done)

- read (and answer) e-mail regularly in January regarding start-up and group formations

- don't book a skiing vacation for after semester start!