DD2377 Low Level Programming and Computer Architecture 7.5 credits

Maskinnära programmering och datorarkitektur

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for DD2377 valid from Spring 2009

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completed course, you shall be able to

- describe how data and computer programs are stored on the computer
- describe how computer programs are executed on different levels
- describe how computers interpret and execute machine code
- describe how computers are constructed
- read, understand and write C and assembler programs for the X86 architecture in a Unix environment
- use your knowledge to write efficient computer programs that use the computer's architecture.

Course contents

Different forms of data and how they are represented in the computer: numbers, text and computer programs. Machine code and assembler programming.

The architecture of computers. CISC and RISC. Pipelining, out-of-order processing and related problems. The memory hierarchy from register to hard disk. C programming in general but especially optimization on the word and bit level. Exercise in using disassembler, debugger etc.

Course literature

R. E. Bryant och D. O'Hallaran: Computer Systems a Programmer's Perspective, Prentice Hall.

Examination

- LAB1 - Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH’s coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Laboratory assignments (LAB1; 3 university credits) (LAB2; 3 university credits) and examination (TEN1; 1,5 university credits).

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.