DD2497 Project course in System Security 7.5 credits

Projektkurs i systemsäkerhet

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 DD2497 valid from Spring 2019

Grading scale

P, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Data security equivalent to the course DD2395.

Language of instruction

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

Intended learning outcomes

After passing the course, the students should be able to:

- discuss abstract about the vulnerability of systems and the efficiency of countermeasures,
- use functionality in system software to ensure memory isolation
- design and develop a monitor that certifies the integrity of a system
- use and be based on technologies for isolation of error in software
- be based on system software to support diversification
- document his arguments and results in writing

in order to

- in the working life be able to evaluate and improve the safety of system.

Course contents

The course includes several technologies for safety for system software. The technologies are based on memory isolation, monitoring, static analysis and diversification to prevent, discover or mitigate illegal behaviour.

- Part I. Trends in system security: buffer overflow, code injection, control flow manipulation, side channel attack, error injection
- Part II. Design of system software
- Part III. Mechanisms for system security: memory inspection, remote control, memory address randomization, reliable start, isolation of error in software

The main assignment in the course are to design, implement and evaluate. The work is carried out in groups as a project.

We base our experiments on an existing operating system.

Course literature

Will be announced on the course web no later than 10 weeks before the start of the course.

Examination

- INL1 - Project documentation, 1.0 credits, grading scale: P, F
- PRO1 - Project work, 6.5 credits, grading scale: P, 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.

In this course, the code of honor of the school is applied, see: http://www.kth.se/en/csc/utbildning/hederskodex Under exceptional circumstances for students with disabilities and at re-examination of individual students, the examiner has the right to admit other examination format.

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.