inf450 - Correctness of Graph Programs

Module name
Correctness of Graph Programs

Module code
inf450

ECTS credit points
6.0 KP

Workload
180 h

Used in degree programmes
- Master's Programme Computing Science > Mastermodule
- Master's Programme Embedded Systems and Microrobotics > Akzentsetzungsmodule

Contact person
module responsibility
- Annegret Habel

authorized examiners
- Andreas Hein

Prerequisites

Skills to be acquired in this module
The objectives of this module are modelling of systems, system changes and system properties. Introduction to graph programs. Introduction into system correctness. Methods for proving system correctness.

Professional competence
The students:
- Describe the basics of graph programs and graph properties
- Describe verification procedures of system correctness

Methodological competence
The students:
- Model systems, system changes and system properties
- Apply the formalism of graph programs

Social competence
The students:
- Solve problems in a team
- Present and discuss their proposed solutions

Self-competence
The students:
- Reflect upon their actions with regard to term rewriting systems and the methods of those

Module contents
The module is an introduction to the modelling of systems, system changes and system properties by means of graphs, graph programs and graph conditions and presents a method for proving correctness of systems with respect to a pre- and a postcondition.
The basic structures used in this lecture are graphs; they are used in practically all domains of computing science for the representation of complex structures. Graph programs are constructed from the core constructs of nondeterministic rule application, sequential composition and iteration and they can effect programmatic changes of a graph structure. One well-known method for determining the correctness of programs with respect to a pre- and a postcondition is based on the construction of a weakest precondition of the postcondition with respect to the program and the attempt to decide whether the given precondition implies the computed weakest precondition.

**Recommended reading**


**Links**

**Language of instruction**

German

**Duration (semesters)**

1 semester

**Module frequency**

im 2-Jahres-Zyklus

**Module capacity**

Unlimited

**Modulart**

je nach Studiengang Pflicht oder Wahlpflicht

**Lern-/Lehrform / Type of program**

- inf400 Theoretische Informatik I
- inf401 Theoretische Informatik II

**Examination**

**Examination periods**

- Final exam of module: Will be announced during the course

**Type of examination**

- presentation or oral exam

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<th>Course frequency</th>
<th>Workload attendance</th>
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**Total attendance time for module**

56 h