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Master's Thesis

Analysis and Model Abstraction of C Programs based on the Frama-C Tool

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Frame-C [1] is a static analysis tool for C programs. It implements a powerful abstract interpretation method which allows deriving possible values or value ranges of variables as well as possible pointer values for pointer variables at code positions. In this way, Frama-C allows drawing important conclusions about a C programs, e.g., find possible memory access violations or invalid arithmetic expressions.

In this thesis, it should be evaluated how the abstract interpretation methods of Frama-C can be exploited for program understanding and model abstraction. Goal is to use the information provided by Frama-C for building higher-level models and views of a C program. The views and models then should assist a developer in program understanding and defect localization.

The methods developed should be evaluated based on several case examples. Further, the C++ frontend for Frama-C, which is currently in an experimental state, should be evaluated.

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Referenzen

[1] Florent Kirchner, Nikolai Kosmatov, Virgile Prevosto, Julien Signoles and Boris Yakobowski: Frama-C, A Software Analysis Perspective. In Formal Aspects of Computing, vol. 27 issue 3, March 2015. http://dx.doi.org/10.1007/s00165-014-0326-7.

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