

RESUME

Of the Master Thesis

Aspect-oriented system for testing software based on Design by Contract methodology (CodeContract)

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Key words: Design by Contract methodology, building quality software, software testing, aspect-oriented programming

Master Thesis Annotation: The main objective of this master thesis is to create an aspect oriented framework for developing and testing of software based on the Design by Contract methodology.

The first part of this M.Sc. thesis describes the problem area – design and development of quality object-oriented software. It presents the obstacles that stand before the constantly growing software industry and the different software requirements. Some of the most popular methodologies and technologies for creating quality and reliable software are described.

The main part of the master thesis describes in details the methodologies and technologies used in the development of the testing system CodeContract – aspect-oriented programming, Design by Contract and Java annotations. After that it describes the process of software development used for building CodeContract system. This process includes gathering and analysis of the requirements, design and architecture, construction and testing of the system. After the successful development and testing, the system is evaluated and compared with similar products.

The system can be used during the design, implementation and testing of Java 5 applications.

For the implementation of CodeContract system is used Java programming language, its aspect-oriented extension AspectJ and Eclipse.

The system CodeContract is developed as an open source project. The code, installation packages and documentation can be freely downloaded from:

<http://code.google.com/p/codecontract/>