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Instrumentation of Dynamically Generated .NET Code for Performance Analysis

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Context and Goal

Dynamic code is a technique to generate code at run time. Common real world scenarios for dynamic code generation are aspect-oriented programming and object-relational mapping. Instrumentation is a technique that can be used to analyze run-time performance, e.g., in application performance management systems. Instrumenting dynamic code requires different techniques than instrumenting statically compiled code. The objective of this master thesis is to research a method to instrument dynamic .Net code and implement a prototype for such an instrumentation.

Approach

In this thesis, we want to research the instrumentation of dynamic .Net code. Based on this research, we want to implement an instrumentation prototype, which will be integrated into dynaTrace. In detail, we will:

- Research the possible ways how dynamic code can be generated in .Net.
- Research application scenarios for dynamic code, i.e., find frameworks or applications that make use of dynamic code generation. Analyze which type of dynamic code generation they use.
- Research approaches for the instrumentation of dynamically generated IL code.
- Implement an instrumentation prototype for dynamic IL code instrumentation.
- Integrate the instrumentation prototype into Compuware dynaTrace software.

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Beginn: November 2012