

DeepTest the Static Debugger of Java Programs

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Program slicing has first been proposed by Mark Weiser [1, 2]. The slicing criterion is a pair $C = \langle I, V \rangle$, where I is a program point and V is a subset of program variables. The backward static program slice S with respect to slicing criterion C consists of all parts of the program that have direct or indirect effect on the values computed for variables V at I . Later on the definition is extended to forward slicing where starting from the slicing criterion S those statements are selected, which are directly or indirectly depend on S . Program slicing can be used in various ways. It can be used to maintain or get familiar with a large and complex source code written by a third person. It is useful in debugging, to locate the errors more easy. Several applications such as optimization, program analysis, impact analysis, information flow control are based on program slicing.

Nowadays the program slicing is a progressive research field in computer science. The original definition of program slice is static and backward slice. It means the method applied on source code and determined those statements, that affected the given expression.

There are slicer tools under development for different programming languages. Frama-C is a suite of tools dedicated to the analysis of the source code of software written in C. It contains slicer and dependency analysis tools.

In this paper we present our tool, called DeepTest [4], which is a static debugger based program slicing of Object Oriented applications written in Java programming language. DeepTest performs static slicing and able to compute both forward and backward slices. One of the real use application of slicing is the size of information, i.e. hundreds of lines of codes that is very difficult to be evaluated. DeepTest solves the problem by providing only the direct influences to the user. In this way DeepTest can be considered as an alternative of traditional debuggers, without executing the code. DeepTest also provides a dynamic call graph tool which is able to mind polymorphical properties of objects when creating call graphs.

References

- [1] Weiser, M.: Program slicing. Proceedings of the 5th International Conference on Software Engineering, pages 439–449, IEEE Computer Society Press, March 1981.
- [2] Weiser, M.: Program slicing. IEEE Transactions on Software Engineering, Volume 10, Issue 4, pages 352–357, IEEE Computer Society Press, July 1984.
- [3] <http://frama-c.com/>
- [4] <http://www.deeptest.com/>