Introduction to the Mika White Papers

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Abstract

The Mika white papers illustrate, from a user point of view, the different usages of Mika. At the most basic level, Mika allows the automatic generation of test inputs from Ada source code to achieve a given code coverage. It is the ambition of this series of white papers to illustrate the potential benefits for the testing process of adopting Mika.

1 Introduction

Software testing is very often a bottle neck in our software development processes. Further, there is a lot of different, sometime conflicting, views as to how software testing should be performed. To avoid confusion we introduce a few definitions of key terms as used throughout this series of white papers.

Test input A test input contains the input values necessary to execute the code under consideration. It typically includes, subprogram arguments and global variables that are read in during execution of the code under consideration.

Test case A test case is a test input along with the expected behaviour of code according to its specification. The expected behaviour is described by the effects that the execution of the code under consideration has on rest of the code. It should include return value of functions, values of output arguments and values of affected global variables.

Black box testing Involves the generation of test cases from specifications and the execution and validation of those test cases on the actual code.

White box testing Involves the generation of test inputs from the code under consideration, typically to achieve a specific coverage criterion, the execution of these test inputs on the actual code, and the validation of the behaviour of the code according to its specification.

The generation, execution and verification aspects of the software testing process are typically very expensive, time consuming and error prone to perform. We contend that Mika, our automatic test inputs generator from Ada source code, can greatly reduce the cost, the time and the number of errors made in those three areas of concern, namely, the generation, execution and verification aspects of the software testing process. In particular Mika can greatly help in the generation and execution of test cases for verification purposes.

In this series of white papers we use compact examples to illustrate our ideas and Mika's capabilities. Each of our white paper is supported by a short video demonstrating the live usage of Mika. Input files, results files and other documents are also available alongside the white papers. These can be found on our website [1].

Whilst, Mika's user manual [2] describes how to use Mika and Mika's release note document [3] describes the latest evolutions of the tool, we aim, with this series of white papers, to illustrate Mika's potential benefits and contributions to the entire testing process.

2   Installing Mika

Mika's installing process is straightforward [2]. The video supporting this white paper demonstrates how to install the free version of Mika and also how to set the full version's license key.

3   Other Mika White Papers in the Series

1. "Basic Automatic Generation of White Box Test Inputs from Ada Source Code using Mika" [4] white paper and video illustrate the most basic functionality of Mika: how to generate test inputs automatically for an Ada subprogram in order to achieve full branch coverage during execution;

4   Conclusions

We hope that the Mika white papers series answers your questions about Mika and its different usages within a given testing process. If this is not the case, please let us know using our website's [1] feedback mechanism at `http://www.midoan.com/request.html` which can also be accessed directly from within Mika's GUI.

This document is a dynamic one and will be updated as more white papers become available.

References

[1] Midoan Software Engineering Ltd. Midoan website. `http://www.midoan.com/`.

[2] Midoan Software Engineering Ltd. Mika user manual. Technical report, 2010.

[3] Midoan Software Engineering Ltd. Mika release notes. Technical report, 2010.

[4] Midoan Software Engineering Ltd. Basic automatic generation of white box test inputs from ada source code using Mika. Technical report, 2010.