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# Anxiety: A Dynamic Symbolic Execution Framework

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| I. Introduction                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| II. Dynamic Symbolic Execution | <b>Abstract:</b> This paper presents a modular dynamic symbolic execution (DSE) framework Anxiety developed at Ivannikov Institute for System Programming of the Russian Academy of Science... <b>View more</b>                                                                                                                                                                                                                                                                                          |
| III. Implementation            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| IV. Evaluation                 | <b>Metadata</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| V. Conclusion and Future Works | <b>Abstract:</b><br>This paper presents a modular dynamic symbolic execution (DSE) framework Anxiety developed at Ivannikov Institute for System Programming of the Russian Academy of Sciences (ISP RAS). The main purpose of creating yet another DSE framework is in moving forward research on DSE at ISP RAS, providing analysis support for different operating systems and platforms and continuing research for applications of DSE in a wide area of program analysis on top of this framework. |
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I. Introduction

Size and complexity of modern software has been growing steadily for years; the age of individual programming “craftsmanship” is mostly over. Modern software systems are typically created by large teams of developers. Moreover, there are usually no team members possessing in-depth knowledge about every part of the system being developed. In such an environment, lack of communication and individual oversights lead to software defects. Therefore, it is quite important to have automatic tools which can allow developers to detect defects either at certain points of time or continuously throughout the development process. From the end user perspective, it is important to have software certification organisations that are responsible for proving software correctness and—as a part of certification process—the absence of critical security vulnerabilities in it. As shown earlier [1] known methods of assuring software quality such as testing and code review cannot provide a sufficient level of completeness for defect detection. Methods used for black-box and grey-box fuzzing cannot provide acceptable levels of program semantic coverage [2] despite achieving high basic block coverage and effectiveness in finding zero-day defects.

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