

Bachelor's/Master's Thesis

Mining POSIX Specifications for Better Testing

Background	<p>The portable operating system interface (POSIX) standard specifies the operating system API mostly adopted by UNIX-based systems to facilitate program portability across different platforms. Linux's interface specification, called the Linux Standard Base (LSB), is also mostly based on POSIX.</p> <p>As the functions of the POSIX interface constitute a way for user programs to trigger privileged kernel functions, it is important that they are correctly implemented and cannot be abused by adversaries to circumvent the system's security policies. In order to extensively test POSIX implementations, a number of automated test generation approaches and tools have been developed. While these approaches efficiently create large numbers of interesting test inputs to POSIX functions, the applied test oracles are surprisingly simplistic. In most cases, the test execution is only monitored for obvious errors, such as segmentation faults.</p>
Objectives	<p>The goal of this thesis is to improve the quality of test oracles for POSIX functions. The Open Group, the organization responsible for maintaining the POSIX standard, is providing web sites for all specifications of POSIX functions. Due to the structured HTML format of the specification, information on input-output relations can be automatically extracted and used to derive test oracles (i.e., the expected output) for any generated test input.</p>
Prerequisites	<p>Candidates should have basic familiarity with UNIX or Linux programming. Experience with web crawling is beneficial. The thesis will be written in English.</p>
Duration/Start	<p>Immediate</p>
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Literature



Analysis



Implementation



Awesomeness

