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Abstract

The paper studies testing based on input/output transition systems, also known as input/output automata. It is assumed that a tester can never prevent an implementation under test (IUT) from producing outputs, while the IUT does not block inputs from the tester, either. Thus, input from the tester and output from the IUT may occur simultaneously and should be queued in finite buffers between the tester and the IUT. A framework for so-called queued-quiescence testing is developed, based on the idea that the tester should consist of two test processes, one applying inputs via a queue to an IUT and the other reading outputs from a queue until it detects no more outputs of the IUT, i.e., the tester detects quiescence of the IUT. The testing framework is then extended with so-called queued-suspension testing by considering a tester that has several pairs of input and output processes. Test derivation procedures are elaborated with a fault model in mind.

Keywords : Conformance testing, test generation, input/output transition system, fault model