Petrenko, A., Yevtushenko, N. "Queued Testing of Transition Systems with Inputs and Outputs" In *Proceedings of the Workshop on Formal Approaches to Testing Of Software (Fates'02), A Satellite Workshop of Concur'02*, pp. 79-93. Brno, Czech Republic, August 24, 2002.

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 a system under test from producing outputs, while the system does not block inputs from the tester either. Thus, input from the tester and output from the system may occur simultaneously and should be queued in finite buffers between the tester and system. A framework for a so-called queued-quiescence testing is developed, based on the idea that the tester should consist of two test processes, one process is applying inputs via a queue to a system under test and another one is reading outputs from a queue until it detects no more outputs from the system, i.e., the tester detects quiescence in the system. The testing framework is then generalized with a so-called queued-suspension testing by considering a tester that has several pairs of input and output processes. It is demonstrated that such a tester can check finer implementation relations than a queued-quiescence tester. Procedures for test derivation are proposed for a given fault model comprising possible implementations.