Distributed t-way test suite execution with code coverage on multiple machines

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ABSTRACT
This paper present a distributed test suite execution in term of code coverage analysis for testing a t-way test suite data using tuple space technology with Map and Reduce mechanism. The generated t-way test suite data and software under test (SUT) source code are preloaded into their respective partition using hash based routing algorithm. Each partition parsed each test case within the test suite into actual test data file. The code coverage of SUT source code is tested with each test case in actual test data and produces a test coverage result at their respective partition in term of class, method, block and line coverage. A case study of CGPA calculator as SUT is done to measure the test suite execution performance in term of test coverage with varying interaction strength on single and multiple machine environments. The scalability analysis of distributed test suite execution is also done in term of speedup gained while running on a multiple machine environments. An encouraging result is obtained on test coverage and speedup for multiple machine environments as compared to single machine environment. Higher test coverage and more speedup is obtained in higher machine environments.

KEYWORDS
T-way Testing: Test Suite Generation and Execution; Code Coverage; Map and Reduce; Tuple Space Technology

ACKNOWLEDGMENT

This research is supported by ScienceFund grant from MOSTI on Distributed T-Way Testing System using MapReduce Mechanism on Hadoop Cluster.