Abstract

Testing is an accepted technique for improving the quality of developed software with the increase in size and complexity of modern software products, the importance of testing is rapidly growing. Regression testing plays a vital role for software maintenance when software is modified. The main purpose of regression testing is to ensure the bugs are fixed and the new functionality that are incorporated in a new version of a software do not unfavorably affect the correct functionality of the previous version. So to revalidate the modified software, regression testing is the right testing process. Though it is an expensive process which requires executing maintenance process frequently but it becomes necessary for subsequent version of test suites. To evaluate the quality of test cases which are used to test a program. Testing requires execution of a program. In this paper it is proposed a new test case prioritization technique using genetic algorithm. The proposed technique separate the test case detected as severe by customer and among the rest test case prioritizes subsequences of the original test suite so that the new suite, which is to run within a time-constrained execution environment. It will have a superior rate of fault detection when compared to rates of randomly prioritized test suites. This experiment analyzes the genetic algorithm with regard to effectiveness and time overhead by utilizing structurally-based criterion to prioritize test cases.
Analysis of Test Case Prioritization in Regression Testing using Genetic Algorithm

References

1977.
- P. Coad and Yourdon, E. Object-oriented Analysis. &quot;Yourdon Press, 1990.
- G. Rothermel and M. J. Harrold, A Safe, Efficient Regression Test Set Selection 
  Technique, ACM Transactions on Software Engineering and Methodology, V. 6, no. 2, April 
- D. Hoffman and C. Brealey. Module test case generation. IN Proceedings of the Third 
- M. J. Harrold and M. L. Soa, &quot;An incremental approach to unit testing during 
- C. D. Turner and D. J. Robson. The state based testing of object oriented programs. 
- G. Rothermel, R. Untch, C. Chu, and M. J. Harrold. Prioritizing test cases for 
  regression testing. IEEE Transactions on Software Engineering, 27(10):929–948, October 
- Wei-Tek Tsai, Xiaoying Bai, Ray Paul, Lian Yu. Scenario-Based Functional Regression 
  Testing, , COMPSAC 2001 
- L. White and H. K. N. Leung, &quot;A Firewall Concept for both Control-Flow and 
- Janusz Laski and Wojciech Szermer, &quot;Identification of Program Modifications and 
- R. Gupta, M. J. Harrold and M. L. Soffa, &quot;An Approach to Regression Testing 
  299-308.
- G. Booch, Object-Oriented Design with Applications&quot; Redwood City, Calif. : 
- J. Offutt, J. Pan, and J. M. Voas. Procedures for reducing the size of coverage-based 
  test sets. In Proceedings of the Twelfth International Conference on Testing Computer 
  Developing an object oriented software testing and maintenance environment. 
- N. Wilde and R. Huitt, Issues in the maintenance of object-oriented programs,&quot; 
  University of West Florida and Bell Communications Research, 1991.
  Journal of software testing, verification and reliability, V. 10, No. 2, June 2000.
- G. Rothermel. Efficient, effective regression testing using safe test selection techniques, 
- G. Rothermel and M. J. Harrold, Analyzing Regression Test Selection Techniques,

Index Terms

Computer Science Software Engineering

Keywords

Regression testing, object-oriented, software testing, regression test selection, software maintenance

Genetic algorithm.