Abstract

In recent years, there has been increasing interest on using Component-Base System (CBS) to develop Applications. These parts are glued together to compose an application. Since the approach supports reusability, these parts might be reused into countless systems. CBS provides efficiency, reliability and reduces the need for maintenance. However, performance is a major problem with this kind of applications. It believed that, the failure of performance means
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A financial loss, increased expenses of hardware, higher cost of software development, and harder than that, the loss of relationships with consumers. However, one important solution for that is the avoidance of late performance evaluation. A prediction approach supported with a reasoning framework is a best solution to overcome the problem. In this paper, we investigate and identify problems on software performance prediction in context of CBS. Then we present the result of a comparative evaluation based on selected criteria for three approaches to software performance evaluation namely measurement approach, model-based approach, and mixed approach. The result from the comparative shows that mixed approach is the best method to be used as means to develop the proposed framework. The proposed framework is aiming at enabling developers to efficiently predict and evaluate software performance during development lifecycle. The details of the comparative study are presented as well as the outline of our proposed framework.

Reference

- Chen, et al., Performance prediction of COTS Component-based Enterprise
Applications., in ICSE Workshop, 5th CBSE. 2002.
  Chengdu, China: IEEE Computer Society.
  (2003).
- Grassi, V., Mirandola, R.; A Model-Driven Approach to Predictive Non-Functional
  Analysis of Component-Based Systems. in In: Proceedings of the Workshop Models for
  Balears, Spain, Association for Computing Machinery., 2005.
- Martens, A. and H. Koziolek, Automatic, Model-Based Software Performance
  Improvement for Component-based Software Designs. Electronic Notes in Theoretical
- Kounen, S., et al., Model-Driven Generation of Performance Prototypes, in Performance
- Yan, L., F. Alan, and G. lan, Predicting the performance of middleware-based
- Diaconescu, A., A. Mos, and J. Murphy. Automatic performance management in
  from an Engineering Perspective, in Architecting Systems with Trustworthy Components. 2006,
- Bondi, A.B. Characteristics of scalability and their impact on performance. in Proceedings
  of the 2nd international workshop on Software and performance 2000. Ottawa, Ontario, Canada
  , Pages195 - 203.
- Fayad, M.E., H.S. Hamza, and H.A. Sanchez. Towards scalable and adaptable software
  architectures. in Information Reuse and Integration, Conf, 2005. IRI -2005 IEEE International
- Andresen, K., Gronau, N., An Approach to Increase Adaptability in ERP Systems. . In:
  Managing Modern Organizations with Information Technology : Proceedings of the 2005
- Etessami, K., et al., The ComFoRT Reasoning Framework, in Computer Aided
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**Index Terms**

Computer Science

Software Engineering

**Key words**

Component-based system
quantitative approach
Performance
Prediction