

Metrics for component-based system development

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ABSTRACT. Component-based development (CBD) advocates the acquisition, adaptation, and integration of reusable software components to rapidly develop and deploy complex software systems with minimum engineering effort and resource cost. The work of integrating the components with each other and with the rest of the system is the most important part of the component-based development process.

The interaction among components in an assembly is essential to the overall quality of the system. When integrating components into a system assembly, it would be useful to predict how the quality attributes for the whole system will be. In order to predict and to assess quality attributes, the usage of software metrics is a necessity.

Useful insight on the specificities to consider when developing metrics for CBD are presented, both concerning individual components (assessing components in isolation) and component assemblies (assembly-centric evaluation approach) are presented. Concerning the component-assembly approach we adapt metrics for object-oriented design (CBC - Coupling Between Components) and new metrics are defined (DDT - Depth Dependence Tree and BDT - Breadth Dependence Tree).

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