Abstract

Component-based systems are becoming prevalent at a rapid pace. With the growing demand for components, there arises a need for adequate component testing procedures. The component testing process at user end suffers with the unavailability of source code, which precludes extrapolating standard testing approaches. Effective Object Oriented (OO) component testing techniques require structural and behavioral information of component as a necessary test support element. We propose an OO component-testing framework that relies on utilization of metadata captured in discrete descriptors. A component developer generates a Component-Descriptor (CD) concomitantly with the component that provides behavioral analyses. The user chooses a component by browsing CDs and preparing Component Requirements Descriptor (CRD). Using analyses of component behavior in CD and of minimal requirements in CRD, third-party tester (TPT) conducts user directed component testing and reports bugs to the provider in the form of Component-Test-Specification-Descriptor (CTSD). The provider eliminates those bugs and returns the modified component and CD to TPT. This continues until TPT is satisfied with the reliability of component services. TPT then packages CTSD with the component for the user. The component provider, user, and TPT, each has the responsibility for descriptors unique to their perspective. The proposed framework attempts to eliminate the dilemma of unavailable information and supports objectivity in component testing process.
References


Index Terms

Computer Science

Software Engineering

Keywords

Metadata Component Testing Descriptor Software Testing Software Components Component Metadata