

Documents

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Runtime invocation analysis of API objects in large code base

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Abstract

Software systems use several third party libraries via their available interfaces popularly known as the application programming interface (API). The runtime usage of the API in an object-oriented software system can be defined by several characteristics including the type and number of API objects created, the methods invoked on those objects, and the source code locations from where the objects were created or invoked during their lifetime. These characteristics can be used to identify the source code locations exhibiting different types of runtime behavior which can be used for program comprehension, debugging, performance monitoring and fault detection. In this paper, we define object invocation model based on above-mentioned characteristics. We also propose an implementation framework that can be used to extract key model parameters from any source code. The Java Collections API is one of the most widely used Java APIs. We demonstrate effectiveness of our proposed approach by analyzing object invocation model for Java Collection API in a large open source project. © 2013 IEEE.

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