FeatureIDE: An Extensible Framework for Feature-Oriented Software Development

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Abstract

FeatureIDE is an open-source framework for feature-oriented software development (FOSD) based on Eclipse. FOSD is a paradigm for construction, customization, and synthesis of software systems. Code artifacts are mapped to features and a customized software system can be generated given a selection of features. The set of software systems that can be generated is called a software product line (SPL). FeatureIDE supports several FOSD implementation techniques such as feature-oriented programming, aspect-oriented programming, delta-oriented programming, and preprocessors. All phases of FOSD are supported in FeatureIDE, namely domain analysis, requirements analysis, domain implementation, and software generation.

Keywords: Feature-oriented software development, software product lines, feature modeling, feature-oriented programming, aspect-oriented programming, delta-oriented programming, preprocessors, tool support

1. Introduction

Feature-oriented software development (FOSD) is a paradigm for the construction, customization, and synthesis of software systems (Apel and Kästner, 2009). A *feature* is a prominent or distinctive user-visible aspect, quality, or characteristic of a software system (Kang et al., 1990). The basic idea of FOSD is to decompose software systems into features in order to provide configuration options and to facilitate the generation of software systems based on a selection of features. A *software product line* (SPL) de-