

Clean Your Variable Code with FeatureIDE

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ABSTRACT

FeatureIDE is an open-source framework to model, develop, and analyze feature-oriented software product lines. It is mainly developed in a cooperation between University of Magdeburg and Metop GmbH. Nevertheless, many other institutions contributed to it in the past decade. Goal of this tutorial is to illustrate how FeatureIDE can be used to clean variable code, whereas we will focus on dependencies in feature models and on variability implemented with preprocessors. The hands-on tutorial will be highly interactive and is devoted to practitioners facing problems with variability, lecturers teaching product lines, and researchers who want to safe resources in building product line tools.

CCS Concepts

•Software and its engineering → Software product lines; Feature interaction; Integrated and visual development environments;

Keywords

software product lines, feature-oriented software development, feature modeling, configuration, preprocessors, Antenna, integrated development environment, Eclipse

1. MOTIVATION AND OVERVIEW

Often software systems have to be tailored to the needs of different customers. If differences between those systems are made explicit in terms of features, feature-oriented software product lines can be used to automatically generate software variants based on a selection of features [1].

In feature-oriented software development, valid combinations of features are specified in a feature model during domain analysis. In domain design and domain implementation, those features are mapped to development artifacts, such as models, code, documentation, or tests. Preprocessors support a fine-grained mapping, as illustrated in the tutorial. Guided by the feature model, valid configurations are derived and then used as input for the preprocessor.

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Since 2004 we are developing tool support for feature-oriented software development for Eclipse in the FeatureIDE project [3, 2, 5, 4]. Since 2009, FeatureIDE is open source and received contributions from all over the world. While FeatureIDE started as a tool for teaching and a vehicle for research prototypes, it is also applied in industrial projects.

The tutorial is planned as a highly interactive, half day event. We will demonstrate FeatureIDE's functionality and interleaved hands-on sessions can be used by participants to tryout FeatureIDE with our help. In the interactive parts, the goal is to clean an example product line. Participants are asked to *bring a notebook* for the hands-on sessions. The tutorial will cover the following topics:

1. Introduction to feature-oriented software development
2. Setting up Eclipse and FeatureIDE
3. Creation and cleaning of feature models
4. Creation and cleaning of preprocessor directives
5. Testing product lines with ensured coverage

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