eXtreme Editor

Bridging the Aspect-Oriented Programming Usability Gap

UCIrvine
University of California, Irvine

ISR
Institute for Software Research
UNIVERSITY OF CALIFORNIA, IRVINE

ASPECT-ORIENTED SOFTWARE DEVELOPMENT (AOSD)

aims to reduce complexity and increase reuse by providing an explicit mechanism for modularization of crosscutting concerns. In spite of the modularization benefits supported by the Aspect-Oriented Programming (AOP) paradigm, different usability issues have hindered its adoption.

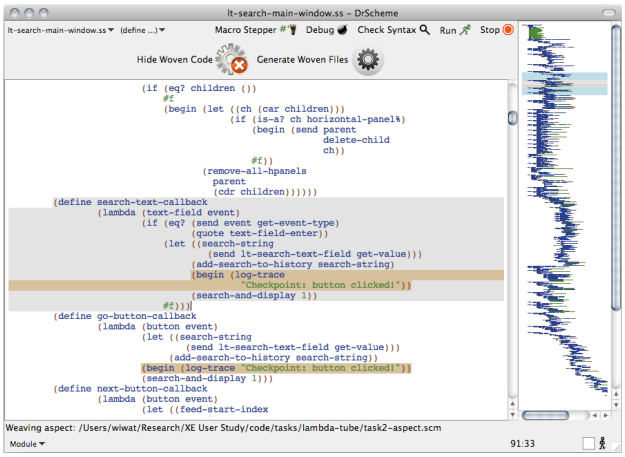
EXTREME EDITOR (XE)

was developed as DrScheme Toolbox to provide support Aspect-Oriented software evolution and program comprehension. XE IDE integrates components around a common relational model, providing meta-interpreters that are responsible for combining aspect and base code in a single view. XE that is designed to aid in the understanding and evolution of aspect-oriented programs.

- visualizing and identifying the exact points in the code where aspects are woven.
- preventing inconsistencies in aspect-base code.
- evolving aspect-oriented code in a coherent way.

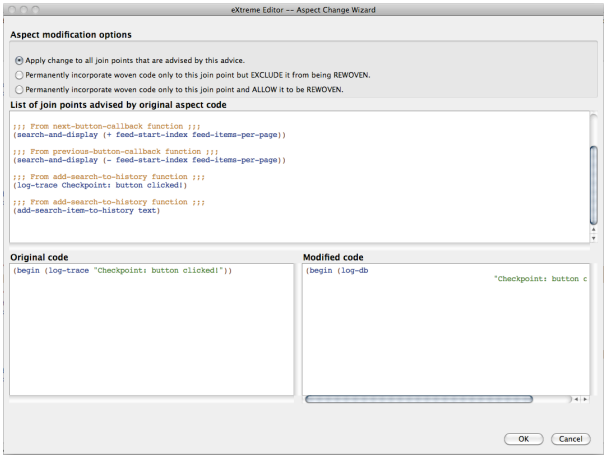
Include the ability to:

- edit woven code and have the edit(s) back-propagated to either the base or aspect code.
- incrementally weave in aspects to understand their impact on the final program.
- view the join points actually quantified by a given pointcut descriptor.



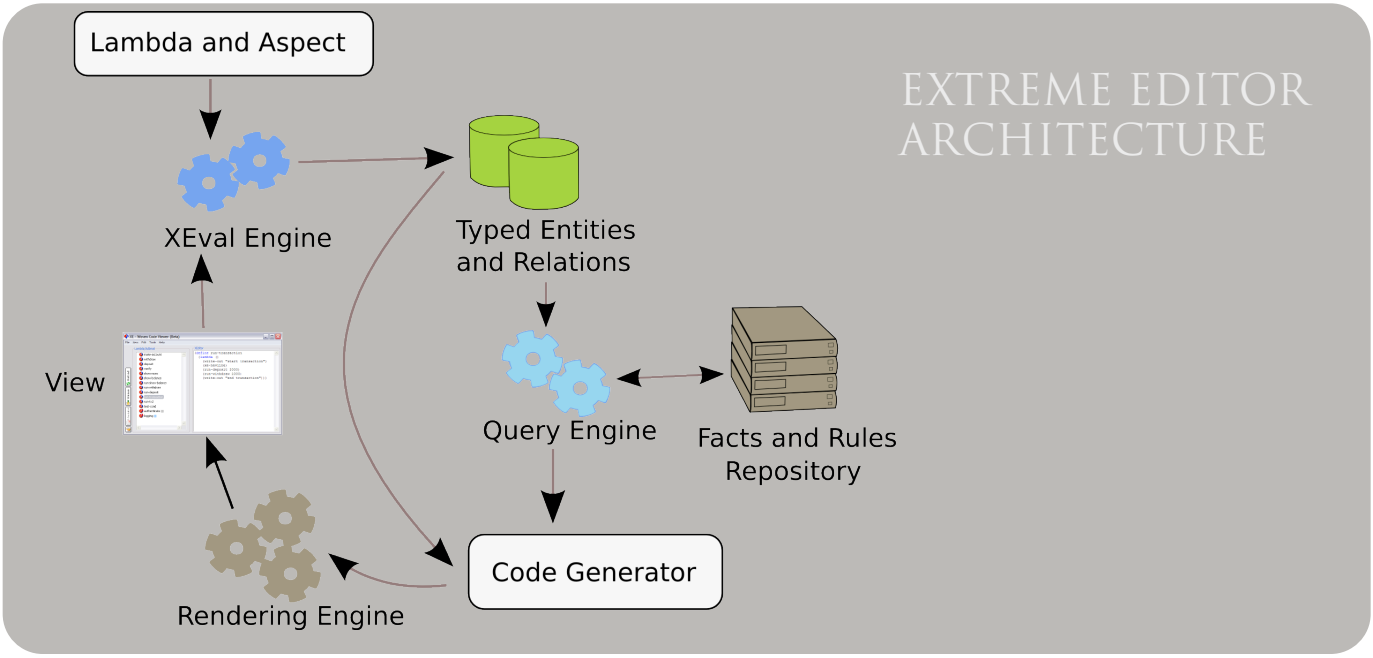
MAIN USER INTERFACE

Showing woven code and base code in same view.



ASPECT CHANGE ADVISOR

Supporting AOP evolution with XE; (1) Applying changes to any JPs. (2) Permanently incorporating aspect code to JP that its woven code has been modified.



EXTREME EDITOR ARCHITECTURE

FUTURE WORK

Future work includes extending XE program model and approach to other programming paradigms, e.g. Java and AspectJ, as an Eclipse plug-in. We also aim at supporting parallel development, when different programmers build a common piece of AOP software.

Contact Information

Professor David F. Redmiles redmiles@ics.uci.edu
Professor Cristina V. Lopes lopes@ics.uci.edu
Wiwat Ruengmee wruengme@ics.uci.edu
Sushil K. Bajracharya sbajrach@ics.uci.edu

Information and Computer Science
University of California
Irvine, California 92697-3425

THIS RESEARCH WAS SUPPORTED BY THE U.S. NATIONAL SCIENCE FOUNDATION UNDER GRANT NUMBERS 0534775, 0205724 AND 0326105, AN IBM ECLIPSE TECHNOLOGY EXCHANGE GRANT, THE INTEL CORPORATION, AND BY THE ROYAL THAI ARMY. THE CONTENT OF THE INFORMATION DOES NOT NECESSARILY REFLECT THE POSITION OR THE POLICY OF THE GOVERNMENT AND NO OFFICIAL ENDORSEMENT SHOULD BE INFERRED.