-- Draft --

Code Recommenders 0.5 Release Review

Johannes Lerch (learch@cs.tu-darmstadt.de)
Marcel Bruch (bruch@cs.tu-darmstadt.de)
Sebastian Proksch (proksch@cs.tu-darmstadt.de)

About

The Code Recommenders project develops tools that automatically analyze large-scale code repositories, extract interesting data from it and integrate this information back into the IDE where it is reused by developers on their daily work.

The vision of the project is to create a context-sensitive IDE that learns from what is relevant in a given code situation from its users and, in turn, give back this knowledge to other users. If you like, you may think of it like a collaborative way of sharing knowledge over the IDE

– or as „*IDE 2.0“ (in accordance to Web 2.0)*.

Introduction

- Code Recommenders is a Technology sub-project.
  - See http://eclipse.org/recommenders
- This release is the 1st release at Eclipse.org.
- The goal of this release is to build an Eclipse community around it and provide the first usable version of Recommenders.

Committer Diversity

- The project is mostly staffed by Technische Universität Darmstadt (TUD) yet.

- **Committers:**
  - Andreas Kaluza (individual)
  - Eric Bodden (TUD)
  - Johannes Lerch (TUD)
  - Marcel Bruch (TUD)
  - Sebastian Proksch (TUD)
  - Stefan Henss (individual)

- Committer election for Doug Wightman, Queens University, Canada is in progress.

Contributors

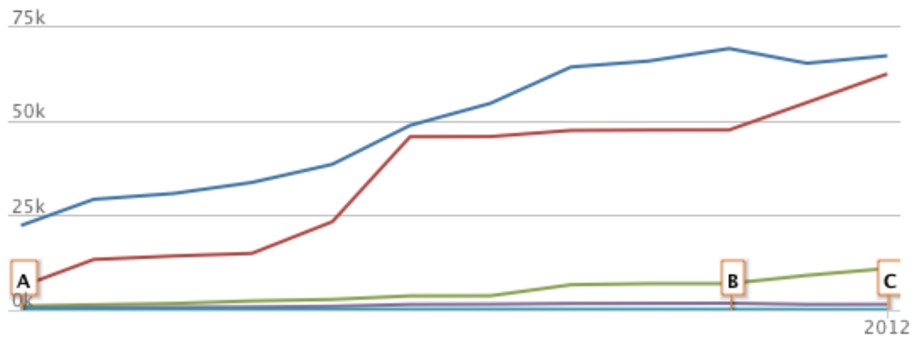
So far, the project received several contributions from individuals.

- **Contributors:**
  - Andreas Frankenberger (Crowd-sourcing Server)
  - Andreas Kaluza (Call Chain Completion)
  - Gary Fritz (Call Chain Completion)
  - Marko Martin (Call Chain Completion)
  - Paul-Emmanuel Faidherbe (Subwords Completion)

Project History

Based on Ohloh.net from 01.02.2011 to 22.01.2012

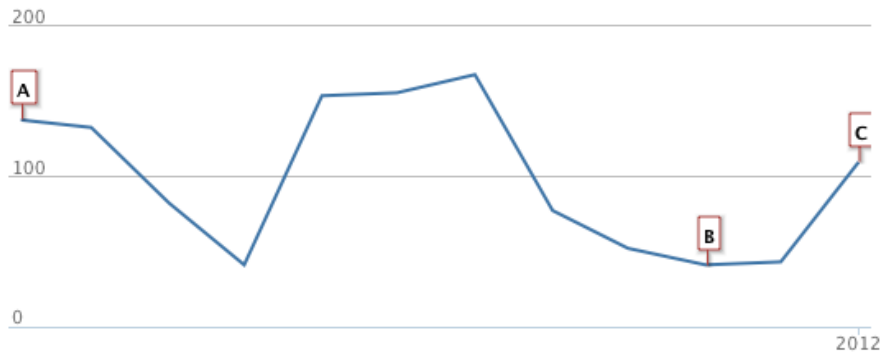
- **LOC Java (blue line):**



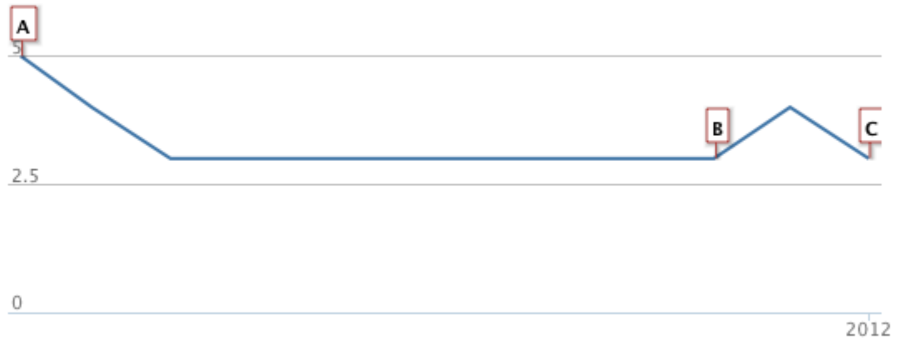
22 klocs Java code in 01.02.2011
67 klocs Java code in 22.01.2012

Red line represents XML. This line shows changes to .target, .pom files, etc.

- **Number of commits:**



- **Number of active committers:**



Feature Overview 0.5

What's new in Recommenders for this release?

- **Completion Engines – completely based on JDT**
  - Intelligent Call Completion
  - Intelligent Overrides Completion
  - Naive Subwords Completion
  - Naive Chain Completion
- **Extended Documentation Platform**
  - Override Patterns Documentation Provider
  - Self-Calls Documentation Provider
  - Interactive Calls Recommender (basically code completion in documentation)
- **Zero Configuration Efforts**
  - Eclipse projects supported out-of-the-box.
- See New and Noteworthy website for details on these features.

Non-Code Aspects

- User Guide:
  - In progress

- Low activity on forum yet.
  Reasons include:
  - Limited set of APIs covered → add support for Java standard library
  - Limited performance → 0.5 is a big boost to eliminate this limitation
  - Limited visibility → publish or perish. Good API coverage is needed before.

- Scheduled Talks:
  - 03/2012: Eclipsecon, US
  - 05/2012: Eclipse DemoCamp at FossLC.de, TU Ilmenau, DE
  - 07/2012: RheinJUG Java User Group, DE

Architectural Issues

No severe issues, but:

Code Recommenders contributes to the existing Java code completion. Since JDT has no filtering capabilities and only a limited support for resorting proposals, developer using Code Recommenders may get flooded with **too many** proposals.

One can think of redesigning Recommenders’ completion engines to contribute to a new relevance **sorter** instead of adding more proposals to JDT’s code completion **popup**. This needs further investigation.

Support by the JDT team on this would be very appreciated.

Provisional APIs

Most parts of Code Recommenders are extensions of existing extension points and are yet not intended to be extended by clients.

However, since 0.5 there are two **provisional** APIs available:

- Extension-point to add own providers to the Extdoc platform, and
- Infrastructure to add new intelligent completion engines.

See http://www.eclipse.org/recommenders/docbook/ch03.html for more details on how to extend Code Recommenders.

Tool Usability

- Code Recommenders intelligent completion engines (calls and overrides), and Subwords are fast and non-disruptive.
- Chain Completion performs an exhaustive search, thus, should not be placed on the default completion tab.
- Extdoc is designed to replace the Javadoc View. There may be rendering issues on different platforms.
- Yet, we deliver recommendations models for Eclipse APIs only. Support for Java and other APIs is planned for v0.7.

- Generally, only the Java language is supported.

General Notes on UI Usability

- No NLS support.
- Yet very limited configuration options to tweak extdoc and completion engine behavior.

Standards

Yet, there are no standards the Code Recommenders project defines. However, it seems worth mentioning that Code Recommenders offers a RESTful server interface to deliver recommendation models to its clients. This API allows other clients and IDEs to share and consume data provided by Code Recommenders for their own purpose.

Finalizing the server-side RESTful APIs is planned for 1.0.

Privacy

This section is added as template for later releases. Code Recommenders is build around the idea of IDE 2.0 (see http://code-recommenders.blogspot.com/2010/08/eclipse-and-academia-briding-gap.html for more details on IDE 2.0).

This idea also includes sharing user data such as how developers use code completion etc. to learn valuable models and to deliver them to other developers.

Note that Recommenders v0.5 does not offer any usage data sharing capabilities.

Bugzilla (as of 22.01.2012)

Bugzilla interactions since inception:

- 65 bugs reported
- 49 bugs closed
- 16 open open

IP Log

Not submitted yet.

Preliminary IP Log is available here:

- http://www.eclipse.org/projects/ip_log.php?projectid=technology.recommenders

Schedule

- **v0.5** – 30.01.2012 (Juno M5)
  - Stable and fast completion engines
  - Stable extdoc client
- **v0.6** – 19.03.2012 (Juno M6)
  - Server-side RESTful interfaces
  - Stable Snipmatch integration (tentative)
- **v0.7** – 07.05.2012 (Juno M7)
  - Recommender support for Java standard APIs
  - Stable code-search engine
  - Servers set up for Juno.
- **v1.0** – 27.06.2012 (Juno Release)
  - Community service for sharing usage data

Project Plan

- **Available at:**
  - http://eclipse.org/projects/project-plan.php?projectid=rechnology.recommenders

- **Themes**
  - Intelligent Completion Engines
    - Usability & Performance
    - Recommendation quality & API coverage
  - Extended Documentation Platform
    - Improved API Coverage
  - Code-search
    - Usability & Performance
  - Snipmatch
    - Usability & Performance
  - Building a community