

Evaluation

Apache ant versions 1.7.0, 1.8.4, 1.9.14, and 1.10.12 have many iterations. Progressively they have been making the codebase less complex and more maintainable. This is shown by the WMC lowering through each version dropping from 15.12 to 14.61; also the DIT shows it becomes less complex with a dropping score from 2.28 to 1.92. The NOC score was high however by version 1.10.12 Apache ant has been and is closer to moderate levels by going from .76 at 1.7.0 to .62 by 1.10.12. Apache ant has been becoming more coupled; from 1.7.0 the score has only risen 6.60 to 7.84. The RFC has been steadily up to version 1.9.14. 1.7.0 had a score of 27.36 and 1.9.14 was its best score at 22.52 and has since raised slightly to 22.77 by version 1.10.12. Lastly, ant's LCOM score is improved over version 1.7.0, 1.8.4 and 1.9.14; going from 29.79 to 27.03. Although with version 1.10.12 it spiked back to 29.35 while still minor improvement from version 1.7.0, ant has regressed.

Recommendations

Apache ant should focus on decoupling their classes. Their score has been steadily improving; however, the score is still high as of version 1.10.12. This will promote reuse of classes and then ant will have better class encapsulation.

Metric Example

- Weighted Methods per Class (WMC)

Choose public class org.apache.tools.ant.PathTokenizer (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. The only methods inside that are called are, StringTokenizer, pathSeparatorChar, isFamily, PathTokenizer, hasMoreTokens, nextToken, NoSuchElementException, Trim, length, isLetter, charAt, startsWith, Equals pathSeparator.

WMC = 14

- Depth of Inheritance Tree (DIT)

Choose public class org.apache.tools.ant.PathTokenizer (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. The total length from not to root is 1.
org.apache.tools.ant.PathTokenizer -> java.lang.Object

DIT = 1

- Number of Children (NOC)

Choose public class `org.apache.tools.ant.PathTokenizer` (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. `org.apache.tools.ant.PathTokenizer` does not have any children

NOC = 0

- Response For a Class (RFC)

Choose public class `org.apache.tools.ant.PathTokenizer` (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. On lines 68 and 72 you initialize two tokenizers and on line 74 initializing `dosStyleFileSystem`.

RFC = 3

- Coupling Between Objects (CBO)

Choose public class `org.apache.tools.ant.PathTokenizer` (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. `org.apache.tools.ant.PathTokenizer` has five other classes linked to it: (1) package `org.apache.tools.ant`; (2) import `java.io.File`; (3) import `java.util.NoSuchElementException`; (4) import `java.util.StringTokenizer`; (5) import `org.apache.tools.ant.taskdefs.condition.Os`;

CBO = 5

- Lack of Cohesion of Methods (LCOM)

Choose public class `org.apache.tools.ant.PathTokenizer` (apache-ant-1.10.12), which is in excel apache-ant-1.10.12 link #144. `org.apache.tools.ant.PathTokenizer` has 4 instance variables, `StringTokenizer`, `lookahead`, `onNetWare`, `dosStyleFileSystem`. `org.apache.tools.ant.PathTokenizer` has 3 methods, `nextToken`, `hasMoreTokens`, `PathTokenizer`. `nextToken` uses all 4 variables, `hasMoreTokens` uses `lookahead` and `StringTokenizer` and `PathTokenizer` uses `dosStyleFileSystem`, `onNetWare` and `StringTokenizer`.

LCOM = .25 or 25%