Martin Packaging Metrics

Efferent Coupling (Ce):

The high value of the metric Ce > 20 indicates instability of a package, change in any of the numerous external classes can cause the need for changes to the package.

Preferred values for the metric Ce are in the range of 0 to 20, higher values cause problems with care and development of code.

In our case, the package *biz.ganttproject.impex.csv* has a Ce metric of 70, which means it depends on a lot of classes from other packages, making it unstable.

Afferent Coupling (Ca):

High values of metric Ca usually suggest high component stability. This is due to the fact that the class depends on many other classes. Therefore, it can’t be modified significantly because, in this case, the probability of spreading such changes increases.

Preferred values for the metric Ca are in the range of 0 to 500.

In our case, the package *net.sourceforge.ganttproject* has a Ca metric of 515, which is outside the optimal range, and classes on this package depend a lot on other classes.

Instability (I):

Preferred values for the metric I should fall within the ranges of 0 to 0.3 or 0.7 to 1. Packages should be very stable or unstable, therefore we should avoid packages of intermediate stability.

In our case, every package has a value of either 0 or 1, which is ok.

Abstractness (A):

Preferred values for the metric A should take extreme values close to 0 or 1. Packages that are stable (metric I close to 0), which means they are dependent at a very low level on other packages, should also be abstract (metric A close to 1). In turn, the very unstable packages (metric I close to 1) should consist of concrete classes (A metric close to 0).

In our case, the package *net.sourceforge.ganttproject* doesn’t follow this rule, having a value of 0.00 for both I and A metrics, meaning it can’t be extended.

Normalized Distance from Main Sequence (D)

The value of the metric D is used to measure the balance between instability and abstractness. It should be as low as possible so that the components are located close to the main sequence.

In our case, some strange results occur regarding this metric, in packages *biz.ganttproject.core.chart.canvas* and *biz.ganttproject.core.calendar*, where A metrics are 0 and I metrics are 1, but somehow the metric D is also 1.

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| --- | --- | --- | --- | --- | --- |
| **Martin Packaging Metrics** | A | Ca | Ce | D | I |
| net.sourceforge.ganttproject | 0.00 | 515 | 0 | 1.00 | 0.00 |
| biz.ganttproject.impex.msproject2 | 0.00 | 0 | 5 | 0.00 | 1.00 |
| biz.ganttproject.impex.csv | 0.00 | 0 | 70 | 0.00 | 1.00 |
| biz.ganttproject.core.chart.canvas | 0.00 | 0 | 0 | 1.00 | 1.00 |
| biz.ganttproject.core.calendar | 0.00 | 0 | 0 | 1.00 | 1.00 |
| **Average** | 0.02 | 45.76 | 45.76 | 0.37 | 0.52 |

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