Metrics – Martin Packaging Metrics

Package metrics are used to help programmers increase the quality of the design and reduce the cost of development of software. These metrics help determine which packages are hard to maintain and/or lack abstraction, stability, coupling. The Martin Packaging Metrics, proposed by Robert Martin, these metrics are focused on identifying poorly designed packages and measure a few characteristics.

**Abstractness (A)** -> The ratio between the number of abstract classes and the number of overall classes in the package. Ranges between 0 and 1, where 0 is package devoid of any abstraction and 1 a totally abstract one.

**Afferent Coupling (Ca)** -> The number of classes outside of the package that depend on the package.

**Efferent Coupling (Ce)** -> The number of classes outside of the package in which the package depends on.

**Instability (I) ->** Represented by the following equation:  **,** ranging between 0 and 1, where 0 is a indicates a stable package whereas 1 indicates maximum instability.

**Distance from the main sequence (D)** -> , ranging between 0 and 1 where 0 stands for a package that coincides with the main sequence and 1 a package as far from the main sequence as possible.

Looking at the data collected from all the JabRef packages and comparing to the \logic\importer\fetcher package, we can observe that the Ce value is a statistical outlier. Which means that there are a lot of classes outside of the package that it depends on. This coupled with the fact that the Abstractness is also a low number explains why the ComplexSearchQuery.java code smell exists. The code should be reformatted to improve abstraction and reduce efferent coupling to ultimately reduce complexity.