A Tool for Measuring the Appropriateness of Access Modifiers in Java Systems

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AccessAnalysis compares the ACCESSIBILITY of Java types and methods with their ACTUAL USAGE.
Minimal Access Modifier

The **most restrictive** access modifier of a type or method that would allow all existing references to that type or method (in the surrounding software system).
```java
package example.contract;

public class Contract {
    private ContractPeriod _period;
    ...
}

package example.contract;

public class ContractPeriod {
    ...
}
```

### Access Analysis

**Actual Access Modifier**
- `ContractPeriod` public
- `Contract` public

**Minimal Access Modifier**
- `ContractPeriod` default
- `Contract` public

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AccessAnalysis
http://accessanalysis.sourceforge.net

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Metrics calculated by AccessAnalysis

- **IGAT**: Inappropriate Generosity with Accessibility of Types
- **IGAM**: Inappropriate Generosity with Accessibility of Methods

The proportion of those types (methods) which actual access modifier is more generous than the minimal one.
Example: *IGAT* calculation

\[
\text{IGAT}\left(\text{example.contract}, \text{example}\right) = \frac{1}{2}
\]

\[
= 0.50
\]
Example: IGAT calculation

\[ \text{IGAT}(\text{example.contract}, \text{example}) = \frac{0}{2} \]

\[ = 0.00 \]
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